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FLORA ODORATA.

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FLORA ODORATA;

A CHARACTERISTIC ARRANGEMENT

OF THE

SWEET-SCENTED FLOWERS AND SHRUBS,

CULTIVATED IN THE

GARDENS OF GREAT BRITAIN.

BY FREDERICK T. MOTT.



LONDON:

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LEICESTER.

1843.

O Father, Lord!
The all-beneficent!—I bless thy name,
That thou hast mantled the green earth with flowers,
Linking our hearts to nature! By the love
Of their wild blossoms, our young footsteps first
Into her deep recesses are beguil'd,
Her minster cells; dark glen and forest bower,
Where, thrilling with its earliest sense of thee,
Amidst the low religious whisperings
And shivery leaf-sounds of the solitude,
The spirit wakes to worship, and is made
Thy living temple. By the breath of flowers,
Thou callest us, from city throngs and cares,
Back to the woods, the birds, the mountain streams,
That sing of Thee! back to free childhood's heart,
Fresh with the dews of tenderness.

MRS. HEMANS.

INTRODUCTION.

The want of a collection of the SWEET-SCENTED *flowers, as distinguished from those whose value depends merely on their outward beauty, has long been felt by the lovers of horticulture; and the present work is designed to supply that want, in such a form as, it is believed, will prove most agreeable to British amateurs; and in which the proper treatment of each species may be most easily discovered, by those who have neither inclination nor sufficient scientific knowledge, to search the more ponderous volumes of the best modern authors.*

We have been engaged for a considerable time in forming this selection, but are nevertheless fully aware that it is as yet somewhat imperfect, several sweet-scented flowers being, no doubt, omitted. These however we hope to be able in a short time to add to the list.

It is also very probable, considering the innumerable varieties of taste and opinion prevailing in the world, that the scent of many which are here included, will be occasionally regarded as anything but agreeable, or as no scent at all. We must therefore be allowed some latitude in our choice, which we think will be found upon the whole, tolerably correct.

It will be seen that such as we have been able to collect, are arranged alphabetically under various heads, according to their habit and manner of growth; and as we have confined ourselves in the present work, to such plants as may be cultivated in this country without the aid of a greenhouse, they are divided into the two classes of Hardy and Half-hardy. The numerous varieties of the rose, the Queen of

Flowers, we considered deserving of a separate head, and have accordingly placed them by themselves, selecting out of the many hundreds of known varieties, about fifty of the choicest and most beautiful.

In addition to the catalogue of sweet-scented flowers will be found, a few general remarks upon the flower-garden, and some of the principal operations connected with it; a very select list of border plants; directions for the management of plants in rooms; and a short outline of the external and internal structure of the vegetable system.

In the whole work we have especially aimed at conciseness; and in the directions for the flower-garden, we have endeavoured to give only such ideas, as appear to be either somewhat new, or not generally noticed, omitting the greater part of those details which are now so universally known, and which would be foreign to our main object.

It may perhaps be expected that something should be said upon the nature of floral scent; but as at present very little is known positively concerning this curious subject, we can only advise our readers to study it for themselves, in doing which we think a collection like the present will be found a valuable assistance; and the result of any observations or experiments, which may tend to elucidate the real cause and nature of odours, will be gladly received by the scientific world.

We have only now to acknowledge how much we are indebted for information and authority, to the justly celebrated works of Lindley, Sweet, Loudon, Rennie, Macnab, &c.; and hoping that at least the novelty of the subject will render our little volume interesting to all true lovers of flowers, we send it forth into the world as an offering of sweet incense upon the glorious altar of Nature.

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HARDY EVERGREEN

SHRUBS,

or those Shrubs which will stand the winter in the open air without protection, and retain their leaves the whole year round.—

ANDROMEDA, MANY-FLOWERED—ANDROMEDA FLORIBUNDA.

Linnean Class and Order, Decandria Monogynia. Natural Order, Ericeæ.

This is a neat little shrub, a native of North America, and like most of the shrubs of that country, requires peat earth and a moist situation, to bring it to perfection; it grows about three feet high, and bears its elegant, spiked, racemes of sweet-scented flowers during the months of May and June. It is generally propagated by layers, but may also be raised from seed. There are several other species of sweet-scented Andromedas, among which are *A. coriacea* a smaller growing plant with pretty pink flowers, and *A. speciosa* with large white bell-shaped flowers.

BARBERRY, WATERY-LEAVED—BERBERIS AQUAFOLIA.

Linn. Hexandria Monogynia. Nat. Berberideæ.

This is a new and very valuable variety of the Barberry, its dark shining foliage, and brilliant yellow flowers, rendering it well adapted for the lawn or shrubbery. Although hardy a slightly sheltered situation is preferable, or it may be trained against a wall. This variety is not generally known, but will, no doubt, prove a valuable addition to our evergreen shrubs. Like the common Barberry it will thrive in almost any soil, and will in time make a handsome bush of from four to six feet high. *Berberis Dulcis*—The sweet-fruited Barberry, is also new and well worthy of cultivation as well for its fragrant flowers as its fruit.

DAPHNE, TRAILING—DAPHNE CNEORUM.

Linn. Octandria Monogynia. Nat. Thymelœæ.

This well known little shrub cannot be too highly appreciated. From the delicate formation of its beautiful pink flowers, and their great fragrance, it should be found in every flower-garden, but probably not more than one in ten possess it. Though often planted it frequently dwindles and dies, which in most cases is owing to the unfitness of the soil, as it will not thrive in the common garden soil, but requires to be grown in sandy peat earth: but where this cannot be obtained, we would recommend some old turf chopped up with the spade, and mixed with about a third

of its quantity of common sand, or road scrapings, where the roads are mended with granite or pebbles, and where one or two plants are intended to be placed, take out the common soil a foot deep and eighteen inches square, fill the hole with the above compost, and cover it two or three inches thick with any light fresh soil. The Daphne will well repay a little attention to its culture, as there are few flowers prettier or sweeter for a glass or nosegay. It is easily propagated by layers, or by grafting on the Spurge Laurel, *D. Laureola*. It continues in flower the whole of the summer, and as it seldom exceeds a foot in height, but trails its long branches close upon the ground, it is well adapted for covering rock-work; all the species of the Daphne are worth cultivating, and several of them are sweet.

EVERGREEN-THORN—CRATÆGUS PYRACANTHA.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

The flowers of the Evergreen-Thorn, better known as the Pyracantha, have a sweet smell resembling new hay, and with its evergreen leaves and bunches of bright scarlet berries, together with its docility of training, although properly a shrub, it is well adapted for any vacant space of wall, and unquestionably ranks among the brightest ornaments of the winter garden; indeed it is beautiful the whole year round, as the berries of the preceeding season have scarcely disappeared, before it is again covered with its beautiful umbels of white flowers. It is propagated by layers or cuttings, and will grow freely in any good soil.

GORSE, or FURZE—ULEX EUROPÆUS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

Almost every dry waste in Britain abounds with this beautiful evergreen, and though so common it well deserves a place in the shrubbery. Its bright golden flowers, which appear early and continue all the summer, form a fine contrast with its dark spiny foliage, and its scent is strong and rich. It will not thrive in wet clayey soils, but in dry stony land it often attains the height of six or eight feet. There is a double variety of the common Gorse which is perhaps handsomer in its flower, though not so sweet as the single one. The Irish Gorse is also only a variety of the common, but there is another species, the Dwarf Gorse *U. nanus* which is much smaller, and flowers from November to January, and is therefore valuable as a successor to the other; both may easily be propagated by cuttings under a hand-glass or by seeds.

JASMINE, ITALIAN—JASMINUM HUMILE.

Linn. Diandria Monogynia Nat. Jasmineæ.

A very ornamental shrub, growing three or four feet high, and producing large, yellow, fragrant flowers, from June to September. It is propagated by layers, or by budding or inarching upon the common yellow *J. fruticans*, this last method makes the strongest and hardiest plants, as the common Jasmine although deficient in odour, grows more freely and rapidly than the Italian.

LAUREL, COMMON—PRUNUS LAUROCERASUS.

LAUREL, PORTUGAL—PRUNUS LUSITANICUS.

Linn. Icosandria Monogynia. Nat. Rosaceæ.

These two species are so well known, that they need no description, it may be sufficient to state, that they will not generally flower, till they have attained a considerable size, but their racemes of small white florets are graceful, and agreeably fragrant. Cuttings planted in the open ground, in August or September, in a moist shady situation, will root freely, or the lower branches may be layered.

LAVENDER, COMMON—LAVANDULA SPICA.

Linn. Didynamia Gymnospermia. Nat. Labiatæ.

This much-esteemed little shrub is readily propagated by cuttings, planted in the Autumn, in a shady situation. The flowers should be cut in dry weather, as soon as they begin to blow.

LOQUAT, COMMON—ERIOBOTRYA JAPONIÇA.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

A handsome shrub, growing from ten to fifteen feet high; it bears racemes of white sweet-scented flowers, about October, which are followed by an agreeable fruit, of a fine yellow

colour, and about the size of a gooseberry, but it will not ripen in the open air. It may be propagated by grafting upon stocks of the common hawthorn.

MAGNOLIA, LAUREL-LEAVED—MAGNOLIA GRANDIFLORA.

Linn. Polyandria Polygynia. Nat. Magnoliaceæ.

This is a splendid specimen of American evergreen trees, its noble shining leaves, and large, white, fragrant flowers, place it in the first rank of sweet-scented evergreens. But although it is so far hardy as to endure the winter in the open air of this climate, it should be in some rather sheltered situation, and as a single tree, to stand alone. Thus planted it is highly ornamental, and will rise to the height of fifteen or twenty feet. It will thrive in any good soil, but prefers a slight mixture of peat. The immense forests of Magnolia on the banks of the Mississippi, when in full flower, are said to present a mass of beauty, and sweetness of odour, not to be surpassed by anything in nature.

PITTOSPORUM, GLOSSY-LEAVED—PITTOSPORUM TOBIRA.

Linn. Pentandria Monogynia. Nat. Pittosporeæ.

A very handsome shrub, having good foliage, and fine, white, sweet-scented flowers; it will stand our winter in a warm situation, and will continue in flower, from April to August;

it is propagated by cuttings, or by grafting on any of the species and makes a handsome bush of from four to six feet high.

RHODODENDRON, SWEET-SCENTED—RHODODENDRON ODORATUM.

Linn. Decandria Monogynia. Nat. Rhodoraceæ.

This is a variety of *R. Azaleoides*, bearing beautiful clusters of pink flowers in June and July, which are very fragrant; it is propagated by layers, and like all the Rhododendrons, prefers a sandy peat soil, though it will grow very well in good fresh loam.

SERVICE, TRUE—PYRUS DOMESTICA.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

The True Service is a native of England, and though not often seen in gardens, is very ornamental. Its flowers which are white, resembling those of the Mountain Ash, open in May and June, and are very fragrant, and its leaves, which are covered with a whitish down on the under side, are extremely beautiful when moved by the wind. It is propagated by seed, and in some parts of France is cultivated for its fruit. The Bastard Service, *P. pinnatifida* is more common, though not less ornamental, than the true one, from which it may be known by its leaves being pinnatifid, while those of the latter are pinnate. Its flowers are white and sweet-scented, as are those of several others of the genus, as the sweet-

scented Crab *P. coronaria*, the White Beam tree *P. aria &c.* To this genus belong also the Pear and the Apple; they will all succeed in any good soil, and are propagated by seeds or grafting.

SOUTHERN-WOOD—ARTEMISIA ABROTANUM.

Linn. Syngenesia Superflua. Nat. Compositæ.

This old acquaintance of the garden is easily propagated by taking cuttings of the ripened wood, and planting them in a sheltered situation in the open ground, early in Spring. The flowers of the Southern-Wood, or Old Man as it is sometimes called, are of a whitish colour and very inconspicuous, but the great fragrance of the leaves, makes it deserving of a place in the present work. There are several other kinds of Artemisia having scented leaves, most of which, however, are only nuisances in the garden, as their long roots or underground stems spread with amazing rapidity, sending up shoots in all directions, and are difficult to destroy, as a very small piece left in the ground will continue to grow, and soon become a large plant.

SWEET BAY—LAURUS NOBILIS.

Lin. Enneandria Monogynia. Nat. Laurineæ.

The sweet Bay is so beautiful an evergreen, that although its flowers, like those of the preceeding, are small and inconspicuous, yet its handsome and fragrant foliage, renders it well worthy of attention. Although usually called hardy, it re-

quires a slight protection from very severe weather, and when young it often appears quite killed by the frost; in such cases however it must not be destroyed, as the root is not dead, and probably the branches are not, and fresh shoots will almost certainly appear with the coming spring.—This observation applies to many evergreens which appear to be killed by severe winters, such as Laurustinus, Arbutus, &c.

THYME, GARDEN—THYMUS VULGARIS.

Linn. Didynamia Gymnospermia. Nat. Labiatæ.

This well known plant thrives best in a dark, rich mould, and is propagated by cuttings or division of the roots. The Lemon-scented Thyme *T. citriodora* is equally common, and requires the same treatment.

WALLFLOWER—CHEIRANTHUS CHEIRI.

Linn. Tetradynamia Siliquosa. Nat. Cruciferæ.

The native haunts of this much-loved flower are well described in the following little verse;—

"Flower of the solitary place,
Grey ruin's golden crown,
That lendest melancholy grace
To haunts of old renown.
That mantlest o'er the battlement
By strife or storm decayed,
And fillest up each envious rent
Time's canker-tooth hath made."

The best garden varieties of the wallflower are the single and double blood, and the double yellow. The first is perhaps the sweetest and most readily obtained. When raised from seed, this should be sown in light rich soil, about half-an-inch deep, either in the open ground or under a handglass, early in spring for autumnal flowers, or early in autumn for spring flowering. And when the plants are two or three inches high, they should be transplanted and shaded from the noon-day sun. If it be desired to have them in pots, the young plants of the autumn's sowing, should be potted off into small pots and placed in a sheltered situation, slightly protected in the winter, and very early in the spring repotted into larger ones, and placed in any warm sunny corner: by this means handsome bushy plants may be obtained early in full flower. The double blood wallflower is a handsome variety, but requires more careful treatment than the common ones. Of the double yellow there are several varieties, some of which are very splendid, but require to be protected from severe frosts. All the wallflowers may be propagated by slipping off the side shoots, when two or three inches long, and planting them in a shady border, and many recommend to plant them exactly as they are slipped off, without cutting off the ragged end of the slip, as is usually done. This mode of propagation may be carried on at any time from Spring to Autumn.

HARDY DECIDUOUS SHRUBS,

or those shrubs which will stand the winter in the open air without protection, but which lose their leaves every Autumn.

ALLSPICE, JAPAN—CHIMONANTHUS FRAGRANS, *or* CALYCANTHUS PRÆCOX.

Linn. Icosandria Polygynia. Nat. Calycantheæ

This is the true Allspice of commerce, and though hardy, it is well deserving of a place in the conservatory. Its small yellowish red flowers are delightfully fragrant, but as they appear very early in the spring, and before the leaf, they are liable to be nipped by the frosts, if not protected. It grows to the height of about six feet, but forms rather a straggling bush and on that account is often trained against a wall.

ALLSPICE, CAROLINA—CALYCANTHUS FLORIDUS.

Linn. Icosandria Polygynia. Nat. Calycantheæ.

The flowers of this plant greatly resemble those of the true Allspice in scent; but they are larger and of a chocolate colour. It is propogated by layers, and thrives best in a mixture of loam and peat.

AZALEA, VISCID—AZALEA VISCOSA.

Linn. Pentandria Monogynia. Nat. Rhodoraceæ.

There are several varieties of this species of Azalea, all of which may be distinguished by the sticky substance which covers their flowers, but the common white, *var: odorata* is the sweetest, though perhaps the pink *var: fissa* is the most delicate flower. They are all American plants of great beauty, well adapted for pots, and for forcing early in the Spring: and as they never exceed three feet in height, they are excellent for the front rows of a shrubbery. They may be propagated by layers, and prefer a peaty soil, or a mixture of dark sandy loam, and leaf mould. Several varieties of the red-flowered and also of the yellow-flowered Azalea are sweet, and all are highly esteemed border plants.

AZAROLE, SWEET-SCENTED—CRATÆGUS ODORATISSIMA.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

This is of the same genus as the common hawthorn, and is cultivated not only for its flowers, which are delightfully fragrant, but also for its fruit, which is very sweet and pleasant, and about the size of a Crab. It grows from ten to fifteen feet high, and bears its clusters of white flowers in May and June.

BARBERRY, COMMON—BERBERIS VULGARIS.

Linn. Hexandria Monogynia. Nat. Berberideæ.

The common Barberry is a native of England, and though when near, the smell of the flowers is sometimes overpowering, it is pleasant at a little distance. Its bunches of long red berries, which have an agreeably acid taste, give it a beautiful appearance in the Autumn, at which time its leaves also become tinged with the same colour. It is sometimes used as a fence, for which purpose it is admirably adapted, in some respects, as it keeps close at the bottom, and no large animal will break through its barrier of thorns. Also from the length and flexibility of its branches, two or three plants may easily be trained into the form of an arbour. To grow the fruit to perfection it must be in a shady situation as the hot sun prevents them from swelling to their proper size.

BRAMBLE, FLOWERING—RUBUS ODORATUS.

Linn. Icosandria Polygynia. Nat. Rosaceæ.

The flowering or sweet-scented bramble, is a trailing plant, well suited for covering rock-work. Its light red flowers are very sweet, and appear in the middle of the summer; the stems are without thorns, and will trail to the distance of seven or eight feet. Several of the other species of Rubus are pretty and some are slightly fragrant; they may all be propagated by suckers or cuttings.

BROOM—CYTISUS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

The common Broom, *C. scoparium*, is a well known native plant, and very ornamental in shrubberies. The scent of its numerous yellow flowers which open in April or May, is strong and honey-like. The Spanish or Rush Broom, *C. junceum*, is valuable as a successor to the former species, as it does not flower till July and August. It bears yellow blossoms at the ends of the branches, and is much better suited for nosegays than the common yellow, as its flowers last longer after they are gathered; there is a newer variety of the Rush Broom *C. junceum var: odoratissimum*, which is highly odoriferous, and a very desirable plant. The White Portugal Broom, *C. albus*, is also common in gardens, and though not so showy, nor its scent so strong, as the common yellow, it is much more delicate. All the species will flourish in any good soil, and may be raised from seed, which they ripen abundantly.

BUDDLEA, ROUND-HEADED—BUDDLEA GLOBOSA.

Linn. Tetrandria Monogynia. Nat. Scrophularineæ.

This is a very handsome shrub, but as it bears its beautiful round heads of fine orange-coloured flowers, rather early in the season, it is sometimes liable to be injured by the late frosts, unless it be in a sheltered situation. It makes a good bush of considerable size, and may be propagated by layers; or by cuttings of the young wood planted in common earth under a hand-glass. The best time for transplanting the Buddlea is, as soon as possible after the fall of its leaf.

CEANOTHUS, OR NEW JERSEY TEA—CEANOTHUS AMERICANUS.

Linn. Pentandria Monogynia. Nat. Rhamneæ.

This is a pretty little shrub, and its small white flowers, which appear early in the Autumn, are very fragrant. It never grows more than two or three feet high, and is therefore well suited for the front of shrubberies. The leaves are dried in some parts of America and used as tea. It is propagated by seeds or cuttings and prefers a moist peaty soil.

CINQUEFOIL, SHRUBBY—POTENTILLA FRUTICOSA.

Linn. Icosandria Polygynia. Nat. Rosaceæ.

This is a native plant found in moist, boggy, places. It is showy, and slightly sweet-scented, proper for the front of shrubberies, thriving well in the common garden soil, and readily increased by seeds or cuttings. Its flowers are yellow, continuing from June to August.

DEUTZIA, ROUGH-LEAVED—DEUTZIA SCABRA.

Linn. Icosandria Polygynia. Nat. Philadelpheæ.

Only one species of Deutzia is, as yet, introduced into Britain. This is a native of Japan, and as it has only lately been brought over, it is not yet much known, we would however strongly recommend it, as it is an elegant shrub, quite hardy, with beautiful, white, orange-like flowers which open in May. It grows about six feet high, and is propagated by cuttings, under a handglass.

ELDER, COMMON—SAMBUCUS NIGRA.

Linn. Pentandria Trigynia. Nat. Caprifoliaceæ.

> Another sweet perfume, but that I know well,
> 'Tis the elder-flower's luscious and honey-rich smell.
> L. A. TWAMLEY.

This is a well-known tree, growing in almost every hedge in England, but nevertheless it is a great ornament to the back of large shrubberies, both in flower and fruit. It will flourish in the most exposed situations, and on that account is recommended as a shelter for more tender shrubs. To be productive as a fruit tree, it requires a deep, rather moist, and rich soil; and the berries for wine should be gathered about August or September, as soon as they are quite ripe. Nothing can be more easy to propagate than the common Elder, as a piece of any branch, the wood of which is tolerably hard and ripe, stuck into the ground will be almost sure to grow.

HAWTHORN, COMMON—CRATÆGUS OXYACANTHA.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

Although this is perhaps the commonest of British plants, its beautiful flowers and delicious odour, make it a general favourite; there are several varieties all of which are highly ornamental, especially the Double-blossomed and Scarlet-blossomed; and they are all well adapted for single trees on lawns. The common hawthorn may be raised from seed, and the haws should be buried in the ground, six months before they are sown; the better sorts may be propagated by budding on the common ones.

LABURNUM, COMMON—CYTISUS LABURNUM.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

There is said to be a variety of the Laburnum, found in some gardens, with very odoriferous flowers, if so, it is doubtless a great acquisition, as these beautiful trees only want scent to make them almost perfect. We have never observed this variety, but state it upon the authority of Mr. Loudon, who gives it in the second suppliment to his "Hortus Britannicus."

LILAC—SYRINGA.

Linn. Diandria Monogynia. Nat. Oleinæ.

All the species of this beautiful shrub are celebrated for their delicious odour. The common Lilac, *S. Vulgaris* grows the largest, and has the handsomest foliage, and the white variety of this is one of the most beautiful of our hardy shrubs, its splendid bunches of pure white flowers, being finely contrasted with its thick, and graceful foliage which is of a lively green. The Persian Lilac, *S. persica* is much smaller than the common, and its leaves are few and insignificant, but this is fully made up by its profusion of flowers, which entirely cover the whole plant, and present a most beautiful appearance in the Spring, when scarcely any of the other shrubs are in blossom. The Chinese Lilac, *S. sinensis*, is a pretty little shrub with violet coloured flowers, growing to the height of three or four feet; all the species may be readily propagated by suckers which they throw up in great abundance, and they will all thrive in any situation, in common garden soil. As the Lilacs

produce their flowers at the extremity of the last year's shoots, these should never be shortened in pruning, which operation indeed they seldom require. These are among the best flowering shrubs for early forcing, especially the Persian variety, which is also a good pot plant.

MAGNOLIA—MAGNOLIA.

Linn. Polyandria Polygynia. Nat. Magnoliaceæ.

There are several species of Magnolia which are hardy deciduous shrubs, and all are sweet-scented. The best of these are *M. Glauca*, the marsh Magnolia, a native of North America, where it often grows to the height of thirty feet, producing its large white flowers from June to September, the scent of which can be discerned at the distance of three quarters of a mile: *M. conspicua*, the Yulan Magnolia, a native of China, much valued as a free, and early flowerer, coming into bloom in February and March; it is not however so hardy as the preceding species, requiring a slight protection in severe frosts; and *M. macrophylla* the long-leaved Magnolia, quite hardy and producing very large white flowers in June and July; its leaves are very long and broad, and it is altogether a handsome tree. *M. obovata* and *M. tomentosa* are natives of China, bearing purple flowers. All the species may be increased by layers or seeds, but if by layers, none of the leaves or shoots should be shortened or cut off when they are taken from the stock, as they greatly assist the plant in forming fresh roots; and this is the case with almost all shrubs, though it is a common, but very erroneous practise, to cut off all the drooping leaves and shoots, they only require shading and watering and will soon come round.

MEZEREON, COMMON—DAPHNE MEZEREUM.

Linn. Octandria Monogynia. Nat. Thymelœæ.

This is the only *deciduous* species of the Daphne. It is a common shrub, but valuable for the abundance and fragrance of its flowers, and as it will thrive under the shade and drip of trees, it is well suited for large shrubberies. It is one of our earliest flowering shrubs, continuing in bloom from February to April. The root is very hot and acrid, and said to be an excellent remedy for the tooth-ache. The berries are a powerful poison, not only to man, but also to other animals. It is readily propagated by cuttings.

RIBES, YELLOW—RIBES AUREUM PRÆCOX.

Linn. Pentandria Monogynia. Nat. Grossulaceæ.

This is one of the earliest flowerers of this numerous genus, to which belong the Currant and Gooseberry, unfolding its drooping bunches of sweet yellow flowers, in March and April. It is a native of North America, and requires a dark rich mould to grow it to perfection. It is a very ornamental shrub and may easily be propagated by cuttings.

ROSE-ACACIA—ROBINIA HISPIDA.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

A very handsome shrub, but its boughs are exceedingly brittle, and liable to be broken, or blown off, by a high wind;

it should therefore be planted in some rather sheltered situation. It bears bunches of rose-coloured flowers from May to September, and is usually propagated by grafting on the common acacia, which should be done on the root a little below the ground, as it succeeds better in that way and is not so liable to be snapped off by the wind.

SPIRÆA, WILLOW-LEAVED—SPIRÆA SALICIFOLIA, *or* SPIRÆA FRUTEX.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

This is a native plant, highly ornamental, and excellent for shrubberies, as it bears all its flowers at the top, so that none are concealed by the surrounding shrubs. They are of a pinkish colour, growing in close racemes, and their long stamens give them a soft downy appearance. As they grow straight and stiff they are well suited for nosegays. It may be propagated by layers or suckers, and is altogether a very desirable shrub.

SPIRÆA HYPERICUM-LEAVED, *or* ITALIAN MAY—SPIRÆA HYPERICIFOLIA.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

This elegant little shrub is a native of North America, its small, white, hawthorn-scented flowers, appear in April and May, in little umbels on the whole length of the branches which curve gracefully towards the ground. It is propagated by layers, and will grow freely in common garden soil.

SYRINGA, *or* MOCK-ORANGE—PHILADELPHUS CORONARIUS.

Linn. Icosandria Di-Pentagynia. Nat. Philadelpheæ.

A free-flowering handsome shrub, well adapted for shrubberries. In appearance and odour, the flowers very much resemble those of the orange, and the leaves have a curious taste like fresh cucumbers. Seeds are seldom produced in this country, but it may be easily increased by suckers, and it thrives in any good soil. *P. grandiflorus* is a newer species and very showy, but the scent of the flowers is not nearly so powerful as in the common one.

WILLOW—SALIX.

Linn. Diœcia Diandria. Nat. Amentaceæ.

There are several species of the Willow deserving of a place in the shrubbery, for their beautiful and honey-scented flowers, which appear very early. The bay-leaved, *S. pentandra* flowers from March to June; the almond-leaved, *S. amygdalina* in April and May, and the long-leaved *S. triandra* from May to August. These, with several other species, are ornamental trees and shrubs, and the down from their seeds, especially of the bay-leaved, is sometimes used as a substitute for, or to adulterate cotton. They will flourish in any good soil, but prefer rather a moist one, and they may very easily be propagated by cuttings, planted in the open ground in Spring.

HARDY CLIMBING, TWINING, AND TRAILING SHRUBS.

Climbing, Twining, and Trailing plants, have all long, weak, slender stems, which, unless provided with some means of support, must, from their own weight, lie prostrate on the ground. The three classes are distinguished as follows: *Climbers* are furnished, as a means of support, with tendrils, as in the vine, or suckers as in the ivy, by which they cling to the stems and branches of other plants. *Twiners* having neither tendrils nor suckers, have their stems so formed as to twine round anything with which they come in contact, as in the honeysuckle, convolvulus, &c.; and *Trailers* are those which, having no means of support, stretch their long arms on the ground or among the branches of low shrubs, as the Jasmine and trailing roses. Under the present head are included only such plants of these three kinds as are *shrubby*, that is, whose stems continue to grow, for many years, as distinguished from *herbaceous* plants, whose stems die down to the roots every Autumn.

GLYCINE, CHINESE—GLYCINE SINENSIS, *or* WISTARIA SINENSIS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

This, and the shrubby Glycine, *G. frutescens*, may be considered two of the most beautiful of our hardy twiners. They

grow very rapidly, especially the Chinese species, which will often send out shoots fifteen or twenty feet long in one season, twining in a direction contrary to that of the sun (see Honeysuckle.) In the months of May and June it bears its beautiful drooping racemes of flowers, of a fine lilac or light blue colour, which are very fragrant but soon fade. It may be increased by layers, or by cuttings planted in sand under a hand-glass, with a little bottom heat. *G. frutescens* does not grow quite so rapidly as the former species, and bears purple flowers later in the season. It is propagated by dividing the roots after it has done flowering. Both these, although properly twiners, will do very well trained against a wall, especially the Chinese, as it flowers early, and is liable to be injured by frost.

HONEYSUCKLE, COMMON—CAPRIFOLIUM PERICLYMENUM.

Linn. Pentandria Monogynia. Nat. Caprifoliaceæ.

"By rustic seat or garden bower,
There's not a leaf, or shrub, or flower,
Blossom or bush, so sweet as thee,
Lowly, but fragrant Honey-tree."

This well-known and much-esteemed plant needs no description, but there are one or two circumstances respecting it worthy of notice. Like most British twiners, it follows the course of the sun, that is, it twines from East to West, turning towards the four cardinal points, in the order of East, South, West, and North. All twiners have one natural course, either following the sun from East to West, or in the opposite direction, from West to East, and they never deviate from their established

rule; but if they are twined the contrary way, and fastened so that they cannot regain their natural position, they will eventually die. When trained against a wall, the Honeysuckle is much more liable to attacks from insects than when twining among other plants, which is its natural position, and that in which it is seen to the best advantage. In raising it from seeds, these should be sown the first Autumn after they are ripe; or it may be propagated by cuttings, which should be put in about September, in a somewhat shady situation in the open ground, being cut so that each shall have four joints, and so planted, that three of these shall be under ground, leaving one above; also, the tops of their hollow stems should be dipped into a little melted wax, to prevent the water from lodging in them, which would soon cause them to rot. There are several varieties of the common Honeysuckle, the best of which is the true Dutch, which flowers well as a twiner, or pruned down as a shrub two or three feet high. Some of the other species of the Honeysuckle are sweet-scented, as the evergreen *C. gratum*, the wavy-stemmed *C. flexuosum*, &c. most of which are elegant twiners, but though some are called evergreen, they are so only in a very sheltered situation.

JASMINE, COMMON WHITE—JASMINUM OFFICINALE.

Linn. Diandria Monogynia. Nat. Jasmineæ.

This beautiful plant, though not a native of this country, has been so long known here, that it is impossible to say whence or at what time we received it. Its delicate white flowers are very fragrant, particularly towards evening, and

they appear in June, continuing till October. When used for covering walls or trelliswork, the Jasmine is better mixed with other climbing plants, for, as its flowers always proceed from the extremities of the same year's shoots, they are produced only at the top of the plant, and the bottom soon becomes bare not only of flowers but of leaves also; this, however, may be partly remedied by cutting down some of the long branches to different lengths, wherever the tree is bare, these will throw out, near their pruned ends, side shoots, which may be trained to fill up the vacant spaces. The pruning of the Jasmine should never be done till towards the end of March, when the chief frosts are over, otherwise the extremities of the pruned branches will be killed, often to the distance of six inches or a foot downwards. Near Paris the Jasmine is much grown by the nurserymen, "who trim them up with a head on a single stem, and then pot them and send them to the flower market, covered with blossoms," the heads are made to flower abundantly without being straggling, by pruning all the branches in Spring to about six inches long, which then throw out flowering side shoots. The white Jasmine is propagated by layers, which require a year to strike root, or by cuttings, which should be planted early in the Autumn and covered with a hand-glass, when they will be fit to transplant the following Spring; and it will grow freely in any good soil. Its long flexible branches are formed by the Turks into tubes for tobacco pipes.

PERIPLOCA, COMMON—PERIPLOCA GRÆCA.

Linn. Pentandria Digynia. Nat. Asclepiadeæ.

A handsome twiner, quite hardy, and bearing clusters of brownish fragrant flowers in July and August; it is well adapted for bowers or trelliswork, grows feeely in any good soil, though it prefers rather a sandy loam, and is propagated by cuttings under a handglass, or by layers.

VINE, SWEET-SCENTED—VITIS RIPARIA.

Linn. Pentandria Monogynia. Nat. Viniferæ.

This species of the Vine is not cultivated for its fruit, and indeed not often for its flowers, which are green and very small, but exceedingly fragrant. It is a quick growing climber, and does well for covering arbours. It is propagated by cuttings, and will thrive in any good rich soil, well drained, or having a dry bottom, such as gravel. A quantity of stones or brickbats thrown in about three feet below the surface, makes an excellent drainage, and none of the Vines will flourish in a wet soil.

VIRGIN'S-BOWER, SWEET-SCENTED—CLEMATIS FLAMMULA.

Linn. Polyandria Polygynia. Nat. Ranunculaceæ.

An excellent climber in any situation where it can use its long spiral tendrils. It grows rapidly, and its small greenish-

white flowers will "scent the evening gale" for a considerable distance with their delicious perfume, and when these fade, it is perhaps still more beautiful when covered with seed, which it ripens in great abundance, and each of which is furnished with a spiral awn covered with short white hairs, which spread out when the seed is ripe, thus supporting it in the wind, while it is borne away to a distance from the parent plant, a beautiful instance of the perfect foresight and wisdom of the Infinite Creator, in providing for the distribution of his wonderful works, over the surface of the earth. Almost all the other species of Clematis are excellent climbers, some of them, as *C. sieboldii* and *C. florida*, have handsome flowers but devoid of scent. The broad-leaved veriety of *C. flammula* is common in gardens, and as it is remarkably quick-growing, soon forms a cover to an arbour or porch, but its flowers are not fragrant, though its seeds are equally beautiful with those of the sweet-scented variety. All these may be propagated by layering the young branches in July, or by cuttings, which should be put in about March, in a warm situation, under a handglass, where they will strike root in two or three months, or by seeds sown in Autumn, in a shallow pan, placed in the shade.

HARDY PERENNIAL HERBACEOUS PLANTS.

Perennials are those plants which continue to grow for many years, and *Herbaceous* plants are those whose flower-stems die down to the root every year, after the flowers are faded. A *Perennial Herbaceous* plant, therefore, is one whose flower-stem perishes annually, but whose root remains alive for many years, sending up fresh flower-stems every season. These are called *evergreen* when the root-leaves remain on the plant all the year, as in the Pink, and *deciduous* when the root-leaves perish at the same time as the flower-stems, as in the Red Pæony.

AGRIMONY, SWEET-SCENTED—AGRIMONIA ODORATA.

Linn. Dodecandria Digynia. Nat. Rosaceæ.

This is a pretty little plant, bearing spikes of bright yellow, very fragrant, flowers in July. It thrives in any common soil, and is increased by division of the root. The common Agrimony, *A. eupatoria*, is a native of Britain, and its flowers, when fresh gathered, smell like apricots. The root has also a sweet scent, and the whole plant was formerly used in medicine.

ASARABACCA, VIRGINIAN—ASARUM VIRGINICUM.

Linn. Dodecandria Monogynia. Nat. Aristolochiæ.

An inconspicuous little plant, whose heart-shaped leaves almost hide its small brown flowers, which however appear early, and are very sweet. It prefers a peaty soil, and is increased by division of the root.

AURICULA—PRIMULA AURICULA.

Pentandria Monogynia. Nat. Primulaceæ.

The original of this beautiful flower is a native of the Alps, and is commonly found yellow, though sometimes red, purple, or variegated. Cultivation, however, by enlarging the flowers, and blending these colours in innumerable shades and variations, has improved it amazingly, and some of the varieties add a delicious scent to their other charms. The Auricula is propagated by dividing the root about the end of July, or new varieties may be raised from seed, and to grow it to perfection, it requires a very rich, sandy soil. The colours most esteemed in the choicer sorts are glowing scarlet, or deep crimson, rich purple, chesnut, or blue, and edged with green, but some of the common yellow or purple ones are quite as rich in scent, though by no means so handsome.

BUTTERFLY ORCHIS—PLATANTHERA BIFOLIA.

Linn. Gynandria Monogynia. Nat. Orchideæ.

This beautiful, and fragrant flower is common in some parts of England, but is never found except in the vicinity of the

limestone formation, as at Buxton, in Derbyshire. It succeeds very well in a pot of pure loam, well drained, or in a dry border, and no plant bears forcing better. It is propagated like most orchideous plants, by dividing the root in the Spring.

COLTSFOOT, FRAGRANT, *or* SWEET TUSSILAGE—TUSSILAGO FRAGRANS.

Linn. Syngenesia Superflua. Nat. Compositæ.

A valuable plant in gardens, as its white flowers, though not very showy, appear very early in the Spring, and are deliciously scented, their fragrance somewhat resembling that of the Heliotrope. It is, perhaps, best grown in pots, as it spreads very rapidly in the open ground, becoming a troublesome weed. It may easily be propagated by dividing the root in the Summer.

COWSLIP—PRIMULA VERIS.

Linn. Pentandria Monogynia. Nat. Primulaceæ.

This well-known plant, so common in every lane, is nevertheless, a beautiful and delicately sweet little flower. It is well adapted for planting under a hedge-row, or in any moist, shady situation, and when grown to perfection, which only requires a little care in giving it good soil, and a tolerable supply of water, is really handsome, having sometimes as many as ninety flowers on one stem.

CROCUS—CROCUS.

Linn. Triandria Monogynia. Nat. Irideæ.

The common varieties of this well-known plant have little or no scent, but a few of the choicer ones are very fragrant. The party-coloured, *C. versicolor* has light-coloured flowers streaked with purple, and smelling like violets. The fragrant Crocus, *C. suaveolens* bears long slender flowers, the tubes of which are yellow, and the limbs, or broad parts, lilac. The former of these is quite hardy, but the other is rather more tender; it requires, however, no protection in a tolerably warm situation. "Crocus bulbs should be taken up every third year, after the leaves decay, dried in the shade, parted, and replanted three inches deep, not later than Michaelmas; the longer they are kept out of the ground after this period, they become the weaker and flower the later." This will apply to the choicer sorts, but the common ones may remain much longer than three years. Crocuses will flourish in almost any soil, but prefer a sandy loam, and masses of them often produce a very splendid effect. Care must be taken, however, to guard them against the depredations of mice, which are very fond of their fleshy roots or corms.

DAY-LILY, YELLOW—HEMEROCALLIS FLAVA.

Linn. Hexandria Monogynia. Hemerocallidæ.

This is an old inhabitant of our gardens, a bulbous-rooted plant, producing abundance of fine yellow flowers in June and

July, which only last one day, but are followed by numerous others, keeping up a succession for several weeks, particularly when planted in a moist, shady situation. There are several other varieties of the Day-Lily; the copper-coloured, growing three or four feet high, the white, and the blue are all common, and may be propagated by offsets from the bulbs.

FRAXINELLA, RED—DICTAMNUS FRAXINELLA.

Linn. Decandria Monogynia. Nat. Rutaceæ.

This is a curious plant, being covered with small glands of a rusty red colour, from which a viscid juice is constantly exuding. The foliage is handsome, and the flowers are of a light purple, with darker veins of the same colour, and the whole plant, especially when rubbed, emits a strong, rich odour like that of lemon peel. The white species, *D. albus* is a more delicate flower, having the same delicious scent; both are propagated by division of the root, or by seeds sown in Spring, which do not come up till the second year. They should have a good rich soil, and require a slight covering of straw or rubbish, in very severe weather.

GLYCINE, TUBEROUS-ROOTED—GLYCINE APIOS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

A pretty twining plant, running five or six feet high, and bearing bunches of pink, fragrant flowers, in August and September. It is a native of North America, prefers a sandy peat soil, and is propagated by cuttings, or by dividing its tuberous roots.

GRAPE-HYACINTH, MUSK-SCENTED, *or* MUSK-HYACINTH—MUSCARI MOSCHATUM.

Linn. Hexandria Monogynia. Nat. Asphodeleæ.

A little bulbous-rooted plant, sending up spikes of curious, brownish flowers, in March and April, which are not at all showy, but have a strong, rich, musky scent. It should be grown in a light sandy soil, and is propagated by offsets. Some of the species of this genus are very ornamental border flowers, but have no scent, among which are *M. racemosum* and *comosum*.

GYMNADENIA, FRAGRANT—GYMNADENIA CONOPSEA.

Linn. Gynandria Monogynia. Nat. Orchideæ.

A native orchideous plant, formerly called *Orchis conopsea*, usually found in dry, chalky meadows, but not unfrequently in bogs, and damp places, where the soil is stiff and heavy. It is not often cultivated in gardens, but if the roots are taken up in the Spring, as soon as the leaves appear above the ground, or in Summer, after the flowers are faded, with a good sized ball of earth round them, and placed in a soil and situation nearly resembling those from which they were taken, they will generally succeed, and it is much superior in beauty and fragrance to very many of the flowers usually grown; indeed, the greater part of our native orchideous plants would be valuable additions to the flower garden, were they more generally cultivated.

HYACINTH, GARDEN—HYACINTHUS ORIENTALIS.

Linn. Hexandria Monogynia. Nat. Asphodeleæ.

This is the origin of all those splendid varieties, now so common in almost every garden. The greater part of our best bulbs are annually imported from the Dutch, who cultivate more than a thousand varieties. They are propagated by offsets from the bulbs, but new varieties must be raised from seed, though this is seldom done, except by professed growers, as the seedlings never flower till the fourth or fifth year. Those bulbs which are planted in the open ground, should be taken up about three or four weeks after they have done flowering, or as soon as the leaves begin to turn yellow. The stem and leaves must be cut off about half an inch from the bulb, which may be laid to dry in the open air, or in a cool airy room, covered with a little dry earth or sand. About a month after this, they should be again taken up, the fibres of the roots rubbed off clean, and the offsets separated. They may then be kept in any dry airy place, till wanted again for planting, which should be in October or November, and in a soil of sandy loam and vegetable mould. The bulbs must not be planted in a *dibbled* hole, as this is sure to leave a vacant space just below them, but the holes must be made about four inches deep with a spade or trowel, and the bulbs placed at the bottom and covered in, slightly pressing the earth down, as it is important that it should touch every part of their surface, especially the base. November is the proper month for placing Hyacinth bulbs in glasses to flower early in Spring, though, of course, the later they are put in the later they will flower. Soft water should

be used in preference to hard, with a very small quantity of salt dissolved in it, and the glasses should be filled so that the water just touches the bottom of the bulb, and kept at this height by constantly filling up. After some time however the water will often become tinged with green, and a green substance will collect round the fibres of the roots; when this appears the water should be entirely changed, and the roots gently washed in clean water and replaced in the glass. Green or blue glasses are said to be preferable to white ones, as the natural position of the root under ground is in almost total darkness. Many people are at a loss to know what to do with their Hyacinth bulbs, which have been grown in glasses, when they are out of flower, and they are frequently thrown away and wasted. Sweet says, "We have seen it announced, that forced bulbs are seldom good for anything afterwards; we have tried this experiment and find that if they are turned out of the pots or glasses, with their foliage uninjured, and planted in a good situation, in a light, rich, sandy soil, that they soon recover, and frequently produce as fine flowers the following season as the last." When Hyacinths are grown in pots, these should be deep and narrow, such as are made for the purpose.

IRIS, PERSIAN—IRIS PERSICA.

Linn. Triandria Monogynia. Nat. Irideæ.

This delicate little Iris only grows about six inches high, and opens its blue and yellow flowers, which are very fragrant, as early as March or April. It bears forcing well, and is propagated by separating the bulbs. The roots of this and

many other Irises are apt, in a loose soil, to run down so deep that they are no longer able to produce their flowers, and are soon lost; but if a thin layer of stones or rubbish, or two or three bricks laid flat down, be placed just under the roots before planting, about a foot below the surface, this will be effectually prevented. The Persian Iris succeeds very well in pots, or grown in water-glasses like Hyacinths.

LIATRIS, SWEET-SCENTED—LIATRIS ODORATISSIMA.

Linn. Syngenesia Œqualis. Nat. Compositæ.

A beautiful North American plant, about three feet high, bearing purple flowers early in Autumn. Its leaves, when dry, have a pleasant smell like that of vanilla. It is hardy in a sheltered situation, but where it is much exposed it should have some slight covering in Winter; or it may be taken up in Autumn, and preserved till Spring in pots. It is evergreen, and is propagated by division of the roots.

LILY, COMMON WHITE—LILIUM CANDIDUM.

Linn. Hexandria Monogynia. Nat. Liliaceæ.

A well-known and much-esteemed border plant, producing its beautifully white fragrant flowers in June and July. It will thrive in almost any soil and situation, and makes offsets from the bulbs very rapidly. There are many species of the Lily, which are all handsome flowers, and some of them very sweet-scented. *L. longiflorum*, is very much like the Common White, but its flowers are longer and larger, and more fragrant,

though it is not quite so hardy, but if planted six or seven inches deep, the frost will not reach it. Mr. Loudon observes that "none of the species can be safely transplanted after they have pushed leaves, without weakening them so as to prevent their flowering for several years. This remark, indeed, will apply to most bulbous-rooted plants;" this operation should, therefore, be performed late in the Autumn, after the leaves and flowers are decayed. When the bulbs are taken up to separate the offsets, which should be done every third year, they should be planted again as soon as possible.

LILY OF THE VALLEY—CONVALLARIA MAJALIS.

Linn. Hexandria Monogynia. Nat. Smilaceæ.

Who does not know this pale emblem of innocence and modesty? It is one of Old England's native gems, growing abundantly in many of our woods, but though its natural haunts are in the shade, and under the drip of trees, it will sometimes succeed even in a sunny border. It is excellent as a sort of undergrowth to shrubberies, and increases rapidly by its creeping roots. It prefers a light sandy loam, or vegetable mould, and to throw it into flower, the soil should be rather poor, otherwise it will run all to leaf; in a stiff, clayey soil it will never flourish at all. The Lily of the Valley is an excellent plant for town gardens possessing a suitable soil, as the smoke and confinement scarcely seem to affect it at all. It also forces well, and in this way a succession may be kept up in pots from Christmas till May, when it flowers in the open air. There are several other varieties of the Lily of the Valley, the double white-flowered, the double and single red-flowered,

and the variegated purple, the latter of which is scarce in England, and all are inferior in scent to the common. Autumn is the season for transplanting the Lily of the Valley, and it is easily propagated by dividing the roots.

MEADOW-SWEET—SPIRÆA ULMARIA.

Linn. Icosandria Di-Pentagynia. Nat. Rosaceæ.

This is a common native plant, growing on the banks of rivers and brooks, or in moist meadows. Its large branched heads of delicate cream-coloured flowers, which continue from June to October, are very fragrant, but they soon wither when gathered. It may be increased by division of the root, and should be transplanted as soon as it has done flowering.

MONARDA—MONARDA.

Linn. Diandria Monogynia. Nat. Labiatæ.

There are several species of this plant, which have showy flowers, and fragrant foliage. The Hollow-stalked, *M. fistulosa*, bears purple flowers from June to August, but the crimson variety of this is much the handsomest. The Oswego Tea, *M. didyma*, bears scarlet flowers, and *M. purpurea*, purple ones, about the same time of the year. All these grow from two to three feet high, prefer a good rich soil, and are readily propagated by dividing the roots, which increase very rapidly; the odour of their leaves is very refreshing, and they are excellent for cut flowers, as they keep a long time in water.

MUSK-PLANT—MIMULUS MOSCHATUS.

Linn. Didynamia Angiospermia. Nat. Scrophularineæ.

A little trailing plant, in much esteem for the strong musky scent of its leaves and flowers. It is quite hardy, will grow in almost any soil, though it prefers rather a rich one with plenty of water, and spreads very rapidly. A small piece of the root planted in a pot will soon cover it, and make a good bushy plant, and as its stems are naturally long and trailing, it may either be allowed to hang down over the sides of the pot, or trained up a light trellis of wood or wire. If the seeds, which are not larger than fine dust, be sown, they must be brought on in a green-house, or warm window. They only require to be sprinkled on the surface of the soil, and care must be taken in watering, not to wash them away.

NARCISSUS—NARCISSUS.

Linn. Hexandria Monogynia. Nat. Amaryllideæ.

Of this beautiful genus of bulbous-rooted plants, numbers are annually imported from Holland, and some from Italy. They are almost all delightfully fragrant, but the scent is very stupifying, and when in excess is even dangerous. The Paper Narcissus, *N. papyraceous*, is one of the most esteemed species, bearing sometimes as many as ten or twelve flowers, of a pure white, on one stem. The Jonquil, *N. jonquilla*, is the most fragrant, one plant being sufficient to scent a good sized room. It is easily known by its rush-like foliage and bright yellow flowers, which grow two or three on a stem, about a

foot high. The Polyanthus Narcissus, *N. tazetta*, of which there are several varieties, differing in the colour of their flowers, is very sweet, and bears from six to ten buds on one stalk. The Poet's Narcissus, *N. poeticus*, is a common but very beautiful flower, of a pure white, with the cup in the centre shallow, and edged with crimson or purple. It bears but one flower on a stem, but this is large and very fragrant. Besides these there are many other species, and several hundred different varieties of the Narcissus cultivated in Great Britain, all of which are excellent for the flower-border, but most of them are not well suited for growing in glasses, though this is frequently done, as they grow up tall and straggling. They will all stand the Winter, but the choicer sorts, if left in the ground, will often degenerate, the double varieties becoming single, and all of them much smaller. When they are taken up, which for the choicer kinds should be every year, though the common ones may remain four or five years, they should have the offsets separated from the bulbs, and planted in a bed by themselves, till the second or third year, when they will begin to show flower. The bulbs may be taken up as soon as their leaves begin to fade, and treated as directed for hyacinths, and they should be replanted in October, in light rich earth. The common sorts produce a much better effect planted in good sized clumps, than by single bulbs, and are excellent for planting among the front rows of shrubberies, or in grass orchards.

ŒNOTHERA, SWEET-SCENTED—ŒNOTHERA ODORATA.

Linn. Octandria Monogynia. Nat. Onagrariæ.

A pretty deciduous little plant, growing about two feet high. It is a native of South America, bearing fine, fragrant, yellow flowers, from April to August. Any good soil suits it, and it may be propagated by division of the root or by seeds.

PANSY, *or* HEART'S-EASE—VIOLA TRICOLOR.

Linn. Pentandria Monogynia. Nat. Violaceæ.

This little native plant, with crosses of *V. lutea*, *grandiflora*, *&c.* is the origin of all those splendid varieties, now called Pansies by florists. The flowers of most of these have a rich though rather faint smell, but there is one variety, of a deep crimson-purple, or maroon colour, which has a scent almost as strong as that of the violet. A really fine Pansy should be from one to two inches across the face of the flower, round, flat, and close in shape, and the colours clear, distinct, and not running into one another; some of the most perfect are much esteemed, and will fetch a high price when first produced. The choice varieties must be propagated by layers or cuttings, but an almost unlimited number of new ones may be raised from seed, which should be sown early in Spring, in a light rich soil, and nothing can be more beautiful than a bed of these seedlings in full flower; to produce fine blooms however they must be grown singly, in highly-manured, rather sandy soil, well watered, and shaded from the hot sun. In its wild state, the *Viola tricolor* is an annual, but the cultivated Pansies are true perennials.

PINK—DIANTHUS.

Linn. Decandria Monogynia. Nat. Caryophylleæ.

The plants of this genus are among the finest ornaments of our flower-borders. There are no less than sixty distinct species and these are subdivided into innumerable varieties. The principal divisions of the genus are the Pink, the Carnation, and the Sweet William. The many varieties of the Pink are supposed to have originated from *D. plumarius*, and some others of the smaller species. They are distinguished by florists, as Pheasant's Eyes, Cobs, and Red early pinks.—Pheasant's eyes are the smallest, red earlies the middle sized, and cobs the larger varieties. To produce fine blossoms, not more than eight or ten flowers are allowed to grow on one plant; and in the Autumn, the smaller side shoots should be pruned in, in order to strengthen those intended for flowering in the following season. They thrive best in a rich, rather sandy loam; and are increased by layers, or by cuttings, commonly called pipings, which however we should recommend not to be pulled out at a joint, as is frequently done, but cut off just below the joint; and the first, and if necessary, the second pair of leaves also, cut down close to the stem. The cuttings should then be laid a few minutes in water, before planting them; in which operation they must not be *dibbled* in, if they are stiff enough to do without it, but "forced into the earth, in their wet state, with a steady hand," about half an inch deep; they should then be gently watered from a very fine rose, and as soon as their leaves are quite dry, covered with a hand-glass, allowing them a little sun in the morning and evening, but shading them during the heat of the day. The soil should

always be kept moist, but after watering, which may be done in the morning or evening, the glass should not be replaced till their leaves are dry. They will also require to be uncovered for about ten or fifteen minutes occasionally, to admit fresh air, and this must be done more frequently when they begin to strike root, which may be known by their looking more green and fresh at the top. Early in the Autumn is the best time for transplanting Pinks; and when an old plant becomes bare and woody about the root, it may be taken up either in Spring or Autumn, and the main branches split asunder. These must be planted in the shade, and "will become good plants if set tolerably deep and kept moist till they have made new roots." The origin of the Carnation is supposed to be *D. caryophyllus*, the Clove Pink. This splendid flower is divided by florists into *Flakes*, or such as have only two colours, with the stripes long and broad: *Bizarres*, which have three colours, (that is two colours, either red and pink, red and purple, or purple and pink, besides the ground which is usually white) with irregular spots and stripes; and *Picotees*, or those which have a white ground spotted or edged with some other colour, and which are further distinguished by the margins of their petals being finely notched or serrated. Carnations may be propagated as Pinks, and when they are in full flower is the proper season for both, but they are rather more tender and are often destroyed by severe winters if unprotected. The Sweet William, *D. barbatus*, is a common plant, but not being included among those which are called florist's flowers, (that is, those which are cultivated by amateur florists for the production of fine flowers, according to certain rules of perfection,) its varieties are fewer, and not named as those of the former species are. Most of them however are

handsome border plants, and there is a double variety which is exceedingly beautiful. Cuttings of the Sweet William will strike root in the open air, at almost any season of the year; and the plants will flourish in any good soil. The seeds also may be sown in the beginning of April, transplanted about June, and they will flower the following Spring. Many of the other species of Dianthus are extremely ornamental, especially the Indian or Chinese Pink, and the Mule Pink, a beautiful hybrid between the Sweet William and the Carnation.

PÆONY, EATABLE-ROOTED—PÆONIA EDULIS, *or* ALBIFLORA.

Linn. Polyandria Digynia. Nat. Ranunculaceæ.

This is the only species of this splendid genus which can truly be called sweet-scented. It has a fragrance somewhat resembling that of the Narcissus but by no means so strong. This species of Pæony is a native of Siberia, and the root of it is there used as an article of food. It grows about two feet high, and bears white flowers in May and June, but there is a Chinese variety of it with red flowers, having the scent of the rose. It will flourish in any good soil not very stiff, and is propagated by division of the root in Autumn, or by seeds. All the species of this genus are noble flowers; most of the herbaceous kinds will thrive under the shade of trees, and we would especially recommend the cultivation of the Chinese tree Pæony, *P. moutan*, which is at present by no means common.

PRIMROSE, COMMON—PRIMULA VULGARIS.

Linn. Pentandria Monogynia. Nat. Primulaceæ.

This has long been a favourite plant, and deservedly so, for it is the companion of the violet, opening its bright starry flowers with the first breath of Spring. It delights in moist clayey soils, in shady situations, and is especially adapted for planting along hedgerows, or among shrubs; but the roots must be taken up and divided every three or four years, otherwise the plants will dwindle and the flowers decrease in size. The proper time for this operation is about Michaelmas, and as it will be found difficult to separate the roots with the hand, they may be cut in pieces with a spade or garden knife. There are many varieties of the common Primrose now cultivated, among the best of which are the Double Lilac, often called the American Primrose, and the Double Carmine, a splendid flower but very rare. The Oxlip, *P. elatior*, another plant of this genus, is a native of Britain, found in some of our woods, but by no means common, it is a handsome flower, but has little or no scent. The numerous varieties of the Polyanthus, so much esteemed as border flowers, are supposed to be hybrids between the common Primrose and the Oxlip. They require the same treatment as the Primrose, but should be grown in a richer and lighter soil. They are propagated also in the same manner, but those plants are said to produce the finest flowers, which are raised from seed. This should be sown as soon as it is ripe in a shady situation, the young plants may be transplanted the following Summer, and will flower the next Spring.

ROCKET, COMMON—HESPERIS MATRONALIS.

Linn. Tetradynamia Siliquosa. Nat. Cruciferæ.

The purple variety of this plant has small flowers and little scent, and is not worth the trouble of cultivation. The single white is not much better, its flowers are larger and more scented, but they are straggling and not very showy. The double white variety, however, is one of the most beautiful and fragrant ornaments of our flower gardens. Notwithstanding this, it is by no means common, and in some places in England is entirely unknown. The reason is this, though it is called a perennial, it is very short-lived, and one plant seldom lasts above two or three years. But most people are not aware of this circumstance, and when it suddenly dies away, its death is attributed to frost, or worms, or any other general cause. However, a succession may be kept up by propagating in the following manner. As soon as the flowers are faded, cut down the stem to the root, and on it, at a little distance from each other will be found several tufts of leaves; these are not long enough to make cuttings by themselves, but if the stem be cut through just above each tuft, then each will have a piece from one to three inches long remaining below it; these will serve to support the cuttings in the ground, and if several tolerably wide notches be cut through the bark, round the stem, just below the tuft, and the cuttings be then stuck into the grouud, quite down to the leaves, so as just to cover the notches, with a handglass placed over them, they will be well rooted and fit to plant out the following Spring. The cuttings should be shaded from the hot sun, and will not require watering more than once a week. When trans-

planted into the open borders they should be shaded and watered for the first two or three days, if the weather is at all warm and dry, and the soil should be light and unmanured. There are several other modes of propagating this plant by cuttings, besides the one here mentioned, but this we can safely recommend as we ourselves have had experience of its efficacy, though very probably some of the others would answer as well. The beauty and great fragrance of the double white Rocket will well repay a little care bestowed upon it; the scent is strongest in the evening, and it makes an excellent pot plant for rooms and windows.

SNOWDROP, COMMON—GALANTHUS NIVALIS.

Linn. Hexandria Monogynia. Nat. Amaryllideæ.

"Earliest bud that decks the garden,
Fairest of the fragrant race;
First-born child of vernal Flora,
Seeking mild thy lowly place."

This is "the first fair offspring of the budding year," and though frequently considered a scentless flower, we can assure our readers that when fresh gathered it is little inferior to the violet in this respect. The Snowdrop is found wild in a few places in England, but most probably it is not truly indigenous. It will thrive in shrubberies under the shade and drip of trees where scarcely anything else will grow; it is also very beautiful when springing up among grass in an orchard, or on a shady bank; and it increases very rapidly both by offsets and seeds. The double variety of the Snowdrop is now quite as common as the single one, but in *our* opinion at least, it is

neither so sweet nor so elegant. There is another species, the plaited Snowdrop, *G. plicatus*, having the leaves wrinkled and broader, but the flowers are not quite so large as those of the common one.

SNOWFLAKE, SPRING—LEUCOJUM VERNUM.

Linn. Hexandria Monogynia. Nat. Amaryllideæ.

This beautiful little plant greatly resembles the Snowdrop in many respects, though by no means so common, but its scent is stronger, and its flowers are larger, and open about a month later. It is a native of moist woods and shady places in Italy and Germany, and should be grown in a somewhat peaty soil. The summer Snowflake, *L. æstivum*, is also very ornamental, its flowers are white and fragrant, and grow several together on one stem. Both may be propagated by offsets.

STERNBERGIA, COLCHICUM-FLOWERED—STERNBERGIA COLCHICIFLORA.

Linn. Hexandria Monogynia. Nat. Amaryllideæ.

A little bulbous-rooted plant, bearing yellow flowers, which are very fragrant, in August and September. It grows in the same manner and about the same height as the common crocus, and is quite hardy except in very exposed situations. It should be grown in light rich soil, and kept dry during the winter.

SWALLOW-WORT, VIRGINIAN—ASCLEPIAS SYRIACA.

Linn. Pentandria Digynia. Nat. Asclepiadeæ.

An ornamental plant though not very showy, throwing up stems three or four feet high, bearing at the top very fragrant purple flowers. In Canada, of which country it is a native, the young shoots are eaten like Asparagus, sugar is extracted from the flowers, and a kind of cotton is gathered from the seed-pods. It is propagated by dividing the roots, which, as in almost all herbaceous plants, should be done soon after the flowers are faded; and it prefers a light peaty soil.

VIOLET, SWEET—VIOLA ODORATA.

Linn. Pentandria Monogynia. Nat. Violaceæ.

This is the sweetest and almost the earliest flower that welcomes the returning of the joyous Spring. There are several varieties cultivated in gardens besides the common blue and white, among which are the double-flowered of both colours; the Neapolitan, which is a pale blue, very fragrant, and excellent for pots or forcing; and the Russian, a variety which flowers in the open air during the whole of the Winter. All the Violets thrive best in a loamy soil with a small mixture of peat, rather stiff than otherwise, and as their trailing stems strike root at every joint, these have only to be separated from the parent to obtain fresh plants.

WATER-LILY, SWEET-SCENTED—NYMPHÆA ODORATA.

Linn. Polyandria Monogynia. Nat. Nymphæaceæ.

This very handsome aquatic plant is a native of North America. Its flowers are white, but though they surpass those of the Common White Water-Lily, a native of Britain, in fragrance, they are much inferior in size and beauty. To fix the roots at the bottom of the water, which is the proper place for growing them, they may be planted in any old wicker basket, filled with rather stiff soil, and sunk where it is desired to have them; the basket will soon decay, the roots will fix themselves at the bottom, and shoot up annually their broad floating leaves and beautiful fragrant flowers, which open about July; and nothing can be a greater ornament to a fish-pond or other piece of water than this plant, or the Common White, *N. alba;* or even when these cannot be obtained the Common Yellow Water-Lily, *Nuphar lutea.*

WOODROOF, SWEET-SCENTED—ASPERULA ODORATA.

Linn. Tetrandria Monogynia. Nat. Rubiaceæ.

A pretty little plant, growing wild in many of our woods, but well deserving a place in the shrubbery, for it is one of the few plants which delight in the shade of trees, and though its small white star-like flowers are not showy, their scent is very agreeable. It will grow in almost any soil, and needs no propagation, as its creeping roots spread very rapidly, and a small piece of one of them taken up and planted again where it is wanted, is almost sure to grow.

HARDY ANNUALS AND BIENNIALS.

Those plants are called *Annuals* which require but one year from the time of sowing, to produce flowers, and ripen seed, and which then perish entirely. *Biennials* are those which require two years to perform the same functions. Thus if an Annual is sown in the Spring, it flowers, ripens its seed, and dies in the following Autumn, as the Ten-week Stock. A Biennial, however, sown at the same time, grows but produces no flowers the first year, lives through the Winter, and in the second season perfects its organs of reproduction in the same manner as an annual does in the first, as the Brompton Stock. By *hardy* is here meant such as may be sown in the open borders without any protection.

ALYSSUM, SWEET—ALYSSUM MARITIMUM, *or* KONIGA MARITIMA.

Linn. Tetradynamia Siliculosa. Nat. Cruciferæ.

A pretty little native plant, bearing small white flowers from June to September, in a wild state; but, as in most annuals, the time of flowering will be according to the time at which it is sown, and thus by beginning early and sowing every month, till the middle of Summer, a succession may be obtained from May to October or November. The flowers of the Sweet Alyssum have a fine fragrance like new hay, and as its seeds ripen well, they may generally be relied upon.

DODDER, NEPAL—CUSCUTA VERRUCOSA.

Linn. Tetrandria Digynia. Nat. Convolvulaceæ.

This is a curious parasitical plant, bearing clusters of white fragrant flowers, from April to October. Its slender thread-like stems twine themselves about the neighbouring plants, in a direction contrary to that of the sun, or from West to East, (see Honeysuckle) sending out a number of little roots or vesicles like those of the Ivy, which adhere to the bark of the supporting tree. Loudon says of it, "Plants raised from seed, soon die when they have no plant to which they can attach themselves. They adhere to the ground by the original root and draw a part of their nutriment from thence at first, but the original root withers away as soon as the young stem has fixed itself to any other plant." The duration of the Dodder depends in a great measure upon the kind of plant to which it is attached; it is usually grown as an annual, and it will seldom survive the first year unless allowed to adhere to some evergreen plant, as the geranium or ivy.

CANDYTUFT, SWEET-SCENTED—IBERIS ODORATA,

Linn. Tetradynamia Siliquosa. Nat. Cruciferæ.

A common little annual growing from six inches to a foot high, and bearing white, slightly fragrant flowers, in July and August. The sweet-scented Candytuft is but a poor flower, but the purple and the rocket are very ornamental, especially the latter.

EVENING PRIMROSE, WHITE-FLOWERED—ŒNOTHERA TETRAPTERA.

Linn. Octandria Monogynia. Nat. Onagrariæ.

The flowers of this plant are large and white, changing to pink as they fade, not opening till about six in the evening, and becoming dead and flacid by morning. It may be sown in the open border in March or April, and will then flower about June, continuing to produce a succession of its beautiful but evanescent blossoms till the end of September; but if raised on a hot-bed, and planted out as a tender annual, its flowers will be much larger and finer. There is another sweet-scented species of Evening Primrose, *Œ. triloba*, a curious plant bearing yellow flowers close to the ground, which are very fragrant in the evening.

LEPTOSIPHON, ANDROSACE-LIKE—LEPTOSIPHON ANDROSACEUS.

Linn. Pentandria Monogynia. Nat. Polemoniaceæ.

This is a most delicate little plant growing about six or eight inches high, and bearing fine heads of flowers of all shades of colour, from lilac and blue to white. Their scent is rich, though not very strong, and they close rather early in the evening. It is quite hardy, and if sown in autumn it will stand the winter and flower early in spring. Another species, *L. densiflorum*, has larger flowers but less showy, not having the dark eye which is invariably found in the former one.

LIMNANTHES, DOUGLAS'S—LIMNANTHES DOUGLASII.

Linn. Decandria Monogynia. Nat. Limnantheæ.

The flowers of this plant are slightly fragrant, and of a very curious colour, being yellow in the middle and white on the edges of the petals, which gives it a faded appearance. It is quite hardy, and prefers a moist shady situation. The seed may be sown at any time of the year except during frost, and they will flower in about six or eight weeks afterwards.

LUPINE, YELLOW—LUPINUS LUTEUS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

The flowers of this plant have a scent resembling that of the cowslip. It is a well-known and hardy annual, and requires no other care in sowing than not to cover the seeds too deeply, and to plant them six or eight inches apart at least, that they may not be drawn up tall and thin. It will thrive in any good soil but will not bear transplanting.

MIGNONETTE—RESEDA ODORATA.

Linn. Dodecandria Trigynia. Nat. Resedaceæ.

The Mignonette is a native of Egypt and the North of Africa, and is properly a shrub, though here usually treated as an annual. It may however be grown three or four feet high in a greenhouse, and preserved for several years as a shrub, and in this state it is even more fragrant than in the borders. To

produce flowering plants of Mignonette during the Winter, the seed should be sown in pots about July, and protected from heavy rain and frost in a cold frame, keeping the earth tolerably moist, and giving plenty of fresh air when the weather will permit. For flowering in the open air the seed should be sown very early in the Spring, not later than the first week in March, as these plants will flower better and continue longer than those that are sown later. Mrs. Loudon recommends sprinkling a little of the seed of *Clarkia pulchella* in a bed of Mignonette, which, she says, produces a very beautiful effect. If Mignonette be sown in a rich soil it will grow luxurantly, but lose the greater part of its fragrance.

PETUNIA, WHITE—PETUNIA NYCTAGINIFLORA.

Linnn. Pentandria Monogynia. Nat. Solaneæ.

A handsome plant, properly a perennial, but usually grown in gardens as an annual; it will be found however that trained against a south wall and protected by mats, it will stand the Winter and grow to a good sized bush. When cultivated as an annual, the seeds may be sown in the open ground, in March, and the plants will continue in flower from June to October. They prefer a light peaty soil or a sandy loam, and are very impatient of stagnant water about their roots. Their stems are long and weak, well adapted for pegging down over the surface of a bed, and in this way their large white flowers appear to greater advantage than in almost any other, especially when mixed with some of the purple kind.

PLATYSTEMON, CALIFORNIAN—PLATYSTEMON CALIFORNICUM.

Linn. Polyandria Polygynia. Nat. Ranunculaceæ.

This elegant little flower has been but lately introduced into this country, and is not yet much known. Its stems, which are several feet long, are procumbent, "gracefully curving upwards at the extremities of the shoots." At these extremities the flowers are produced, which are pale yellow or cream-coloured, and fragrant. The plant is quite hardy, and will thrive in any good soil. The seeds may be sown about March, but only two or three plants should be left together, as they spread considerably.

SCABIOUS, SWEET—SCABIOSA ATROPURPUREA.

Linn. Tetrandria Monogynia. Nat. Dipsaceæ.

A pretty, fragrant, and very common plant, usually a biennial if sown in the open ground, but if brought on under a hand-glass it will flower the same season. There are white, pink, and purple varieties which are generally mixed, and in gathering the seed, it should be remembered, that only those will grow which are green at the top. Some species of the Scabious are perennials, but these are scarcely sweet-scented.

STOCK—MATHIOLA.

Linn. Tetradynamia Siliquosa. Nat. Cruciferæ.

The Ten-week Stock, *M. annua*, is so called because it is said to flower in ten weeks after sowing, but this of course must be very uncertain. It is a well-known plant, not less esteemed for its great fragrance than for its beautiful flowers. Its varieties are very numerous, though perhaps the handsomest is the double crimson; but as double flowers never produce seed, and as the seed of single ones only produces double flowers occasionally, this variety is often difficult to get. The following are the methods usually practiced to obtain it. Out of a bed of single-flowered plants, grown in rich soil, some will generally be found bearing flowers with five or six petals instead of four, which is their natural number; these are selected, the others being pulled up and thrown away, and the seed of these semi-double ones, usually produces a considerable number of double flowers. Such seed may also generally be obtained, by placing a few plants of the double and single varieties together when their flowers are just opening, and leaving them together till they are faded, when the seed must be saved from the single ones. All the varieties of this stock are hardy and will flower if sown in the open borders; but to have them in perfection they should be raised on a hot-bed, and planted out while *quite young*. If this is neglected till they have opened their fourth or fifth pair of leaves, they will seldom succeed, and they are quite old enough when they have opened their second pair. The Russian and Prussian Stocks are only varieties of the ten-week, but the Brompton is a biennial plant, a variety of the Queen's Stock,

M. incana. The seeds of this species should be sown in the open ground about the beginning of May, in fresh, unmanured soil, when they will stand the Winter and flower the following Spring. If they are sown in rich soil they will produce finer flowers, but being more juicy they will be unable to resist the frost, and must therefore be protected during the Winter. The Brompton Stock grown finely often produces flowers from two to three inches in diameter, but it must have rich soil, well drained, and plenty of water while growing, though it will require very little during the Winter, and all the side flower-stems must be taken off as soon as they appear, that the whole of the nourishment may be concentrated in the centre one.

SWEET-PEA—LATHYRUS ODORATUS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

One of the prettiest and sweetest, and at the same time one of the commonest of our garden annuals. Its flowers are of that curious shape called papilionaceous, or butterfly-like, and the footstalks of its leaves are elongated into spiral tendrils, by which its slender stems are supported among the surrounding plants. The seeds of the Sweet-Pea are usually sown in April, when they will flower in July and August; but if sown in Autumn, and the plants slightly protected during the Winter, they will flower about April or May; in all cases no more seeds should be sown than are intended to remain, as their long roots are liable to be disturbed by thinning out, nor will they succeed well when transplanted. The soil should be rich and light, except when they are grown in pots, in which case it should have a slight mixture of clay, and the pots should be

of the deepest kind. There are many varieties of the Sweet-Pea, perhaps the most beautiful of which are the purple, and the Painted-Lady. The Tangier Pea is a handsome flower but scentless.

SWEET-SULTAN—CENTAUREA MOSCHATA.

Linn. Syngenesia Frustranea. Nat. Compositæ.

This beautiful flower is sometimes raised on a hot-bed as a tender annual, but it is quite hardy enough to stand our winters, and indeed those which are sown in the Autumn produce the strongest plants and largest flowers, which open about May or June; but it is as well to sow also in the Spring for late flowering plants. There are three varieties of the Sweet-Sultan, purple, white, and yellow, the last has the richest and most powerful scent, but is rather more tender than the other two.

THORN-APPLE, HORNY-STEMMED—DATURA CERATOCAULON.

Linn. Pentandria Monogynia. Nat. Solaneæ.

This is a magnificent plant, often growing to the height of four or five feet, and bearing large, fragrant, convolvulus-shaped flowers, of a pale colour stained with streaks of purple. Its foliage is also very handsome, and shows well when planted among shrubs. The seeds may be sown in the open ground in March or April, but the young plants should be covered with a hand-glass or flower-pot, when a frost is expected during the

night. They are sometimes raised in a hot-bed or green-house, but they will not flower except in the open air. They should be planted in a light rich soil, and will continue in blossom till destroyed by the early frosts. The purple Thorn-Apple, *D. fastuosa*, is also a handsome annual, and has rather an agreeable scent; it requires the same treatment as the former.

TOBACCO, NIGHT-FLOWERING—NICOTIANA NOCTIFLORA.

Linn. Pentandria Monogynia. Nat. Solaneæ.

This flower, like very many of those which open in the night, is delightfully fragrant, but the sticky hairs upon the stem and leaves have an unpleasant smell. The flowers are pure white above and purple beneath. The Persian or Shiraz Tobacco, *N. persica*, is also a beautiful species, and like the former is very fragrant in the evening; both are quite hardy, and may be sown about March in any good soil.

TURNSOLE, EUROPÆAN—HELIOTROPIUM EUROPÆUM.

Linn. Pentandria Monogynia. Nat. Borragineæ.

A pretty little annual bearing curled spikes of white flowers, which have a delicious scent, like that of meadow hay, or a hot cherry-pie. The seeds may be sown in March, preferring a light loamy soil; and the plants will continue in flower the whole of the Summer.

HALF HARDY EVERGREEN SHRUBS.

Under the head of *half hardy* are included all those plants which will stand in the open air the whole year round, but require some protection during the Winter. As this however depends so much upon situation and other circumstances, it is impossible to draw a very accurate distinction between hardy and half hardy plants on the one hand, and half hardy and greenhouse plants on the other.

ACACIA, THORNY—ACACIA ARMATA.

Linn. Polygamia Monœcia. Nat. Leguminosæ.

The flowers of this beautiful shrub are yellow and very fragrant, and appear in round heads on the sides of the young branches, opening from April to June; and the leaves are sessile, that is without stalks, and curiously twisted. It is usually considered as a greenhouse plant, but we have no doubt it would stand the Winter out of doors in a warm situation, and with a little protection. It succeeds best in a soil of sandy loam and peat, and may be propagated by cuttings of the young wood, which must be struck in pots of sand on a hot-bed, or by good sized pieces of the root planted in sandy peat soil, with their thickest ends above the surface. The sweet-scented Acacia, *A. suaveolens*, is not quite so hardy as the former species, and does not grow so large, but it is equally ornamental.

BEJARIA, SWEET-SCENTED—BEJARIA RACEMOSA.

Linn. Dodecandria Monogynia. Nat. Rhodoraceæ.

A handsome shrub growing three or four feet high, and bearing several light purple flowers at the ends of the branches. It is a native of the Southern states of North America, where it is found on the borders of swamps and lakes, in a moist soil, consisting chiefly of peat and loam. It is propagated by cuttings planted in pots and placed upon a hot-bed. When planted in the open border, it should be well protected during Winter.

CINERARIA—CINERARIA.

Linn. Syngenesia Superflua. Nat. Compositæ.

Among the numerous hybrids and varieties produced, within the last few years, from the cultivated species of this plant, several are sweet-scented. The best of these is the hybrid called the King Cineraria, bearing flowers with the disk purple, and the petals of the ray white tipped with purple. It is an excellent pot plant for rooms, and out of doors requires only just sufficient protection to keep out the severe frosts. It is however very liable to be attacked by insects, which, if not carefully and constantly destroyed, will soon spoil the beauty of the plant. It will thrive in any light rich soil; and is propagated by cuttings of the young wood, planted in pots, in a frame or under a hand-glass.

CORONILLA, SEVEN-LEAVED—CORONILLA GLAUCA.

Linn. Diadelphia Decandra. Nat. Leguminosæ.

This is a very ornamental shrub and nearly hardy. It bears its clusters of bright yellow fragrant flowers from May to November, and in a greenhouse it flowers almost all the year round. It is often trained against a wall, in which situation it does very well, if it be a South aspect, shooting out branches several feet long, which, with the leaves, are of a soft bluish-green colour. It is propagated by cuttings, and prefers a light rich mould. The silvery-leaved Coronilla, *C. argentea*, is also very sweet, but not quite so hardy; its flowers are yellow, and the leaves have a silvery appearance when grown in poor light soil, but if removed to a bed of richer earth they become glaucous, like those of the preceding species; it may be propagated by cuttings or layers.

DAPHNE, SWEET-SCENTED—DAPHNE ODORA.

Linn. Octandria Monogynia. Nat. Thymeleæ.

The flowers of this plant are of a light purple or garnet colour, not very showy but delightfully fragrant, and it continues in blossom from April to November; but it is rather tender and requires to be under glass during the winter. It grows three or four feet high, and thrives best in a rich loamy soil with a little peat. It is easily propagated by cuttings of the ripened wood, planted in sand under a bell-glass, in the greenhouse.

DIOSMA, HEATH-LEAVED—DIOSMA ERICOIDES.

Linn. Pentandria Monogynia. Nat. Diosmeæ.

This is a handsome little shrub, growing about two feet high, and requiring but little protection in a warm situation; it is also an excellent pot plant for rooms, as it is not affected by close confinement. Its flowers are white, but inconspicuous, being solitary at the ends of the branches, but they have a powerful and aromatic scent, as have the leaves also, especially when rubbed between the fingers. It flowers from April to July, is propagated by cuttings treated as directed for the Heaths, and should be grown in a mixture of peat and loam.

EPACRIS, SWEET-SCENTED—EPACRIS PULCHELLA.

Linn. Pentandria Monogynia. Nat. Epacrideæ.

This is almost a greenhouse plant, but well protected in a warm situation, with some straw or other covering round the roots, it will stand the Winter in the open air. It is a beautiful shrub growing four or five feet high, and bearing small pink flowers along the whole length of the branches, which open about June out of doors, though much earlier in a greenhouse. It may be propagated in the same manner as the Heaths, and requires the same soil and general treatment.

ERINUS, FRAGRANT—ERINUS FRAGRANS.

Linn. Didynamia Angiospermia. Nat. Scrophularineæ.

A pretty little alpine plant, growing about six or eight inches high, and bearing yellow, sweet-scented flowers, in May and June; it is well adapted for rockwork, in warm and moist situations, requiring but little protection in winter. It may be propagated by cuttings or layers, and prefers rather a sandy soil.

ERIOCOMA, FRAGRANT—ERIOCOMA FRAGRANS.

Linn. Syngenesia frustranea. Nat. Compositæ.

Rather a new plant, growing about three feet high, and flowering in Autumn. It will succeed well in any good soil, and its flowers which are white, are deliciously fragrant. It is propagated by seeds, or young cuttings planted in Spring under a hand-glass; and requires but little protection during the Winter.

GENISTA, CANARY—GENISTA CANARIENSIS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

An ornamental shrub, growing about two feet high. Its flowers, which are yellow and papilionaceous, are showy and fragrant, and continue from May to September. It ripens seed in abundance, from which it may be propagated; and it thrives best in a soil of sandy loam and peat.

HEATH—ERICA.

Linn. Octandria Monogynia. Nat. Ericeæ.

There are several species of this beautiful tribe of flowering shrubs which are sweet-scented, and almost all of them may be considered half-hardy. The cluster-flowered Heath, *E. regerminans*, bears small red flowers from June to August, and grows about two feet high. The sweet-scented Heath, *E. suaveolens*, produces small globular pink flowers, all along the young branches in July and August, and grows about a foot high. The perfumed Heath, *E. odorata*, bears terminal clusters of white flowers from April to June. The fragrant Heath, *E. fragrans*, bears purple flowers from March to June, and grows about nine inches or a foot high. Bowie's Heath, *E. Bowieana*, bears beautiful white flowers from August to December. All these will stand in the open ground through the Winter, provided they are sufficiently protected to keep the frost from the air and the earth around them; this is all they require, and when many people complain that the Heaths are so difficult to keep, it is generally either because they place them in heat during the Winter, or because they give them too much water when they are out of flower, and not enough air and light, either of which will effectually destroy them; but though during the Winter, they must not have too much water, for fear of their damping off, yet if the roots are once suffered to get thoroughly dry, they will seldom recover, and when they are in flower they can scarcely be watered too often. The only earth in which Heaths will flourish, is sandy peat; and when grown in pots these should be well drained. They may be propagated by cuttings of the

young side shoots, when they are about half an inch long, which should be cut off with a sharp knife or a small pair of scissors, close to the stem, and a few of the lower leaves taken off in the same manner; they should then be dibbled into a well-drained pot of sandy peat earth, having a layer of moist white sand at the top, about a quarter of an inch deep; and after a gentle watering, from a very fine rose, they must be covered with a bell-glass, placed on a very little bottom heat, and shaded from the hot sun. The glass must not be taken off till they are rooted, which may be known by their beginning to shoot; they should then be uncovered for an hour or two every day with occasional waterings, and in the following Spring they may be potted off; and after being gradually hardened to the air, may be treated like the full-grown plants. There are several hundred distinct species of Heaths now grown in England, and scarcely any flower can be more exquisitely beautiful than some of these, thomgh the greater part are unfortunately scentless. Among the most esteemed are the varieties of *Erica vestita*, *ventricosa*, *hyemalis*, *lutea*, *Willmoriana*, *&c.*

HELICHRYSUM, FRAGRANT—HELICHRYSUM FRAGRANS.

Linn. Syngenesia Superflua. Nat. Compositæ.

A very beautiful little shrub, and its small pink flowers, which have an agreeable odour, are of that dry nature commonly called everlasting, so that they will keep for several years after being gathered. It grows about two feet high, and flowers in July and August. It may be propagated from

cuttings, which should be planted in sand and placed on a hot-bed, but not covered with a bell-glass, and requiring but little water; it succeeds best in a sandy peat soil, and should be well protected in Winter.

JASMINE, ARABIAN—JASMINUM SAMBAC.

Linn. Diandria Monogynia. Nat. Jasmineæ.

The flowers of this plant are white, and of the most exquisite fragrance, appearing in Spring and continuing till late in the Autumn. It is better grown in large pots than in the open ground, as it should be placed under cover during the Winter. It may be propagated by cuttings, planted in pots in a frame or greenhouse, and prefers a light rich soil.

LEUCOSPERMUM, ROSE-SCENTED—LEUCOSPERMUM CANDICANS.

Linn. Tetrandria Monogynia. Nat. Proteaceæ.

A little hairy shrub, almost hardy, growing about two feet high, and bearing yellow flowers, which have a slight scent resembling that of the rose, towards the middle of Autumn. It is propagated by seeds or cuttings, and should be grown in a mixture of peat and loam.

MYRTLE, COMMON—MYRTUS COMMUNIS.

Linn. Icosandria Monogynia. Nat. Myrtaceæ.

A well-known shrub, hardy in the South of England, but requiring protection in most places North of the Thames.

The broad-leaved Myrtle, *M. communis var. romana*, is the most esteemed, as its leaves have the strongest scent, and its flowers are larger and more conspicuous than those of the narrow-leaved variety. It often grows to the height of seven or eight feet, and much higher against a wall, and it gets hardier as it grows older. It is propagated from cuttings five or six inches long, of the half ripened wood, taken off early in Autumn, and placed under a hand-glass or frame; and it will flourish in any rich loamy soil.

NYCTANTHES, SQUARE-STALKED—NYCTANTHES ARBOR-TRISTIS.

Linn. Diandria Monogynia. Nat. Jasmineæ.

This has generally been considered a stove plant, and very difficult to bring into flower, but lately it has been treated more hardily and has produced flowers in abundance, and Sweet is of opinion that it would stand our Winters out of doors, with a little protection. We would strongly recommend the trial, as its beautiful white flowers, which only open in the night, are delightfully fragrant. It is easily propagated by cuttings, which should not be too ripe, planted in pots of sand under a hand-glass, with a little heat; and it does best in a rich soil of loam and peat.

OLIVE, FRAGRANT—OLEA FRAGRANS.

Linn. Diandria Monogynia. Nat. Oleinæ.

The leaves and flowers of this shrub are highly odoriferous, and the leaves are much used in China to adulterate and

flavour teas. It grows about four or five feet high, and bears bunches of yellow flowers from June to August. Planted against a wall, and protected from frost, it will stand the Winter and flower freely, and some species of the Olive will ripen fruit in such situations. It is usually propagated by layers, or by grafting on the common privet; and succeeds best in a peat soil with a small mixture of rich loam.

STOCK, NIGHT-SMELLING—MATHIOLA TRISTIS.

Linn. Tetradynamia Siliquosa. Nat. Cruciferæ.

A curious plant, usually cultivated in the greenhouse, though according to Phillips it is quite hardy. Its flowers are loose, ragged, and of a pale dingy purple colour, but strongly and richly scented in the evening, and opening in April and May. The Persian Stock, *M. odoratissima*, has also dingy flowers, very fragrant, which appear in June and July. Both are propagated by slips, and prefer light rich soil.

TURNSOLE, PERUVIAN—HELIOTROPIUM PERUVIANUM.

Linn. Pentandria Monogynia. Nat. Borragineæ.

This little shrub is chiefly cultivated for the delicious fragrance of its small lavender-coloured flowers, which resembles that of a hot cherry-pie; it is rather tender, though in a sheltered situation with a little protection it will endure a moderate frost, but out of doors it is often not evergreen, losing its leaves when Winter commences. It flowers during the whole of the Summer from May to September, and makes an excellent pot

plant. It should be grown in rich vegetable mould or good loam, and is increased by cuttings, which root readily in pots under glass.

VERVAIN—VERBENA.

Linn. Didynamia Angiospermia. Nat. Verbenaceæ.

There are several species of the Verbena which are very beautiful and fragrant, and new varieties are yearly being raised from seed. The White Sweet-scented, *V. teucrioides*, or *Nevinii*, is a strong-growing plant, bearing spikes of beautiful flowers of a pinkish-white colour, which are very fragrant towards evening. The Rose-coloured, *V. odorata rosea*, is a smaller plant and bears corymbs of flowers of a light rose colour, which are slightly sweet. *V. Neilii* has dark purple flowers rather strongly scented, and Mortlock's new Verbena is perhaps the handsomest and most fragrant of all. Besides these there are some splendid varieties having no scent, among which are *V. melindres* and *V. melindres major*, or *latifolia*, both of which have bright scarlet flowers, and make as handsome a bed as any plant cultivated in the garden. All the Verbenas are very nearly hardy, and may easily be propagated by cuttings in pots under glass; but the two last mentioned require only to be divided in the Autumn, as their stems which grow close to the ground, strike root at almost every joint. They will flourish in any good soil.

VIBURNUM, SWEET-SCENTED—VIBURNUM ODORATISSIMUM.

Linn. Pentandria Trigynia. Nat. Caprifoliaceæ.

A handsome shrub, with large dark shining leaves, and bunches of white flowers, which are very sweet, and open in the greenhouse as early as February or March, though out of doors they are somewhat later. It is nearly hardy, and in a warm situation or against a wall, requires but little protection. It should be grown in a light loamy soil, and is propagated by layers or ripened cuttings. The sweet-scented Viburnum is by no means so common as it should be, and we can assure those who feel inclined to try it, that they will not be disappointed.

HALF-HARDY DECIDUOUS SHRUBS.

ALOYSIA, LEMON-SCENTED—ALOYSIA CITRIODORA.

Linn. Didynamia Angiospermia. Nat. Verbenaceæ.

This is frequently called the Lemon-scented Verbena, *V. triphylla.* It is a pretty little shrub, and is chiefly grown for the scent of its leaves, which is very rich and powerful. It bears large spikes of pale pink flowers from May to September, and when trained against a warm wall requires scarcely any other protection. It grows best in light rich soil, and is propagated by cuttings. At the Edinburgh Botanical Gardens there is a fine specimen of this plant between three and four feet high, which stands in the open ground in front of the greenhouse, and we are told requires no protection at all. But though like the Myrtle, and indeed most other plants, it gets hardier as it grows older, when young it is somewhat tender.

BASTARD-INDIGO, DWARF—AMORPHA MICROPHYLLA.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

An ornamental little shrub, growing about two feet high, bearing spikes of purple flowers from June to August. It should be grown in a sandy peat soil, may be propagated by

layers, or cuttings taken off early in Autumn and planted in pots under a hand-glass, and requires but little protection during the Winter.

HERMANNIA, FRAGRANT—HERMANNIA FRAGRANS.

Linn. Monadelphia Pentandria. Nat. Byttneriaceæ.

A pretty little sweet-scented under-shrub, with small yellow flowers, hairy stems, and wrinkled leaves, requiring protection during the Winter. It grows freely in light loamy soil with a little peat, and is propagated by cuttings in the same soil under glass. Another species, the sweet-scented Hermannia, *H. odorata*, is also very pretty, and both are deserving of cultivation.

STÆHELINA, ROSEMARY-LEAVED—STÆHELINA DUBIA.

Linn. Syngenesia Æqualis. Nat. Compositæ.

This shrub is a native of the South of Europe, grows about three feet high, with narrow sessile leaves, and bears purple flowers from June to August. It is propagated by cuttings, under a hand-glass in the open air, and prefers rather a peaty soil.

HALF-HARDY CLIMBING, TWINING, AND TRAILING SHRUBS.

GELSEMIUM, EVERGREEN—GELSEMIUM SEMPERVIRENS.

Linn. Pentandria Monogynia. Nat. Apocyneæ.

A beautiful North American Climber, very nearly hardy against a warm wall. It grows about six or eight feet high, and bears very fragrant yellow flowers in June and July. It requires a sandy peat soil with a mixture of loam, and is propagated by cuttings under a bell-glass.

HOYA, FLESHY-LEAVED—HOYA CARNOSA.

Linn. Pentandria Digynia. Nat. Asclepiadeæ.

This very beautiful evergreen twiner is usually treated as a stove plant; but as we have seen it growing in cottage windows and cool greenhouses, we venture to introduce it here as a half-hardy; and if it could be induced to flourish in the open air, protected during the Winter, its beautiful clusters of delicate pink and white flowers, which have a rich honeylike scent, would well repay the care and trouble. It grows best in a light rich soil, and is propagated by cuttings which must be struck in heat.

JASMINE—JASMINUM.

Linn. Diandria Monogynia. Nat. Jasmineæ.

The sweet-scented Jasmine, *J. odoratissimum*, is a beautiful little half-hardy trailer, growing four or five feet high, and bearing white flowers from May to November. The curled-flowered Jasmine, *J. revolutum*, is almost hardy, and against a warm wall it will stand a moderate Winter without protection; its flowers are yellow and fragrant, and the petals are all bent back towards the calyx, whence its name. Both of these are evergreen, and excellent for a sheltered wall. They may be propagated by cuttings under glass, and succeed best in good rich soil.

PASSION-FLOWER, ROSE-COLOURED—PASSIFLORA INCARNATA.

Linn. Monadelphia Pentandria. Nat. Passifloreæ.

A beautiful climbing plant, a native of America, bearing pink flowers from July to September. It is rather tender, and when grown in the open air it must be against a warm wall, and well protected during the Winter. The fruit of this plant is edible, having a sweetish yellow pulp, but it will not ripen except in the heat of the stove. It should be grown in a rich soil, and is propagated by young cuttings planted in pots on a hot-bed.

HALF-HARDY PERENNIAL HERBACEOUS PLANTS.

ANTHERICUM, SWEET-SCENTED—ANTHERICUM FRAGRANS.

Linn. Hexandria Monogynia. Nat. Asphodeleæ.

A pretty little bulbous-rooted plant, growing about a foot high, with long fleshy leaves, and bearing spikes of white fragrant flowers in April and May; it should be planted in a warm dry border, and covered with a little straw in the Winter. It is propagated by offsets from the bulb, and prefers a sandy peat soil.

BABIANA—BABIANA.

Linn. Triandria Monogynia. Nat. Irideæ.

A very beautiful genus of bulbous-rooted plants, the greater part of which are sweet-scented. Among these are, the plaited-leaved, *B. plicatæ*, a dwarf plant bearing pale violet-coloured flowers in May and June, which have a scent resembling that of the Clove Pink. The two-rowed, *B. disticha*, with purplish white flowers, opening about June, and smelling like the Hyacinth. The elder-scented, *B. sambucina*, which grows

from six inches to a foot high, and bears flowers of a deep rich purple early in the summer; and the narrow-leaved *B. angustifolia*, a beautiful little plant, bearing slightly fragrant flowers of a brilliant blue with dark spots at the centre. Of these the hardiest is *B. disticha*, which requires scarcely any attention in a warm situation. The others should either be taken up in the Winter, or protected by a little straw. If left in the open ground, they should, like all half-hardy bulbs, be planted five or six inches deep, that the frost may not so easily reach them. They should be grown in a sandy peat soil, without any water during the Winter; and the offsets must be separated every two or three years.

BIRDSFOOT TREFOIL, SWEET-SCENTED—LOTUS ODORATUS.

Linn. Diadelphia Decandria. Nat. Leguminosæ.

A little herbaceous plant, growing about eighteen inches high, with clusters of yellow flowers which open in June and July. It requires a little protection, and may be propagated by division of the root or by seeds; it should be planted in a light sandy loam.

BULBINE—BULBINE.

Linn. Hexandria Monogynia. Nat. Asphodeleæ.

An ornamental genus of showy fragrant flowers, easily cultivated, and almost hardy. The most esteemed species are, the Aloe-leaved, *B. alooides*; the dagger-leaved, *B. pugioniforme*;

and the shrubby, *B. frutescens*; the two former of these are evergreen but entirely herbaceous, and grow about a foot high, the latter is suffrutescent, or somewhat shrubby, and rather taller. They all bear yellow flowers the whole of the Summer, are propagated by cuttings, suckers, or seeds, and should be grown in a very sandy soil.

CALLA, ETHIOPIAN—CALLA ÆTHIOPICA.

Linn. Heptandria Monogynia. Nat. Aroideæ.

This curious and very beautiful plant is a native of Southern Africa, but will stand our winters in the open air with a very little protection. The leaves are large, handsome and sagittate, and the calyx, or rather the spathe, of the flower, which is pure white on the inner surface, expands into a most elegant vase-like cup, inclosing the curious flame coloured spadix, which is surrounded near the bottom with numerous minute flowers. It is an excellent pot plant, as its large leaves continue green and fresh nearly the whole year, and in a room or greenhouse it flowers very early in the Spring, though out of doors it is several months later. It requires plenty of water, should be grown in light rich soil well drained, and increases rapidly by suckers.

CHLIDANTHUS, SWEET-SCENTED—CHLIDANTHUS FRAGRANS.

Linn. Hexandria Monogynia. Nat. Amaryllideæ.

A beautiful bulbous-rooted plant, bearing fine yellow flowers of a very delicate colour and texture, which open out of doors

in July and August. It should be planted in the borders in Spring, and either taken up during the winter or well protected from the frosts, bearing in mind that like almost all bulbs, it requires scarcely any moisture while not in a growing state. It is propagated by offsets, and thrives best in a mixture of sandy loam and peat.

CORNFLAG—GLADIOLUS.

Linn. Triandria Monogynia. Nat. Irideæ.

A beautiful genus of bulbous plants, among the numerous species of which the following are sweet-scented. The changeable Cornflag, *G. versicolor*, bears flowers of a brown orange colour in May and June and is very fragrant in the evening. The fragrant Cornflag, *G. suaveolens*, has pale yellow flowers curiously dotted with red, and is very suitable for pots. The violet-scented, *G. recurvus*, bears flowers of a dull violet blue in April and May. The one-coloured, *G. concolor*, has a scent in the evening resembling the common Pink, its flowers are bright yellow and nearly companulate or bell-shaped. The Viper Cornflag, *G. viperatus*, bears very curious flowers, "of a greenish grey, with livid and brown stripes, and they are extremely fragrant." It grows from six inches to a foot high and flowers in April and May. This species is rather scarce, and requires a somewhat stiffer soil than most. The winged Cornflag, *G. alatus*, has a scent like that of the Sweetbriar, and is remarkable for the smallness of its root which is about the size of a large pea. Its flowers are yellow and bright orange crimson, and open in May and June, growing about a foot high. The thread-leaved, *G. trichonemifolius*, bears

yellow flowers in May, with the scent of the Violet. Mr. Colville's, *G. Colvillii*, is a handsome species, growing eighteen inches high, with flowers of a rich rose-colour. The hairy, *G. hirsutus*, has large flowers and hairy leaves and stems, but its colour and height vary considerably with soil and situation. All these are natives of the Cape of Good Hope, and they will all flower as well, and many of them better, in the open ground than in a greenhouse. The later flowering kinds, among which is *G. cardinalis*, one of the handsomest species, but without scent, may be planted in the borders in Spring; but those which flower in April and May should be planted in October. They require a well-drained sandy soil, a warm situation, and protection from the rain and frosts in Winter, the former of which, indeed, is often more injurious than the latter, while the bulbs are in a dormant state, though they should be kept regularly moist while growing. Mrs. Loudon recommends, as a good situation for the Cape bulbs, "a sloping bank in front of a south wall;" and an excellent protection from the frost is, to plant the bulbs about six inches deep, and place a good sized pot filled with dry sand, upside down over the spot where each lies; or a hand-glass, a mat, a little straw, or other litter, will do equally well. The Gladioli, and some others of the Cape bulbs, are among the handsomest and most fragrant ornaments of the flower-garden, and well deserve more extended cultivation.

CYCLAMEN, PERSIAN—CYCLAMEN PERSICUM.

Linn. Pentandria Monogynia. Nat. Primulaceæ.

This beautiful and fragrant flower will succeed very well in a warm dry border, in a light peaty soil; with a flower-pot,

a hand-glass, or a little straw over it in the Winter. Its curious drooping flowers are white with a rim of purple round the orifice of the tube, and open in April and May. It is propagated by seeds, which however can only be obtained from plants six or eight years old. They must be sown as soon as gathered about half an inch deep in pots of light earth, and placed in a rather shady situation, well protected during the Winter; but the young plants will not flower till the fourth or fifth year. There are several other species of Cyclamen, but none so beautiful or fragrant as the Persian.

EVENING FLOWER—HESPERANTHA.

Linn. Triandria Monogynia. Nat. Irideæ.

This is a pretty and deliciously-scented genus of the Cape bulbs, and as the name implies they open only during the night. The cinnamon-coloured, *H. cinnamomea;* the sickle-leaved, *H. falcata;* the radiated or nodding-flowered, *H. radiata;* and the narrow-leaved, *H. angustifolia*, are the most beautiful; but the grass-leaved, *H. graminifolia*, and the hairy, *H. pilosa*, are also very fragrant in the evening when the air is warm and dry. *H. graminifolia* flowers in Autumn, and may therefore be planted about April, and taken up during the Winter; but the others, being Spring flowerers, should be planted in Autumn. They are all small-growing plants, from six inches to a foot high, with delicate starry flowers; but being rather tender they must be well protected in Winter from frost and rain, and are better grown in small pots of sandy peat earth, than in the open ground. Their general treatment is the same as for the Gladioli or Cornflags.

IXIA—IXIA.

Linn. Triandria Monogynia. Nat. Irideæ.

Another beautiful genus of Cape bulbs, of which the following are sweet-scented. The variegated, *I. columellaris*, bears red and purple flowers about August, and continues in bloom for several weeks. The sweet-scented, *I. odorata*, bears short spikes of bright yellow flowers, in May and June, and is almost hardy. The recurved-flowered, *I. retusa*, is rather tender, and its flowers, which are of a bright rose-colour, have a scent resembling that of the Lily of the Valley. The bending-stalked, *I. flexuosa*, flowers about April, and varies considerably in colour, from light pink to purple or deep rose. The hybrid, *I. hybrida*, is a very pretty and elegant species, with white and purple flowers, opening in April and May. The Ixias require the same general treatment as directed for the Cornflags, and are equally deserving of attention, but, as in them, many of the handsomest species are without scent.

LACHENALIA, FRAGRANT—LACHENALIA FRAGRANS.

Linn. Hexandria Monogynia. Nat. Asphodeleæ.

A low-growing bulbous-rooted plant, rather pretty, and very fragrant. It will flower in June and July, in a warm border; and its soil, propagation, and general treatment are the same as directed for Chlidanthus.

LYCHNIS, CHINESE—LYCHNIS CORONATA.

Linn. Decandria Pentagynia. Nat. Caryophylleæ.

The flowers of this plant are bright red or nearly scarlet, and appear in June and July. It will flower well if planted in the open borders in Spring, but should be taken up in Autumn, potted, and preserved through the Winter in a greenhouse or frame. If however this cannot be done, it will stand in a warm sheltered corner, with a little straw or a mat over it during frosts. It may be propagated by cuttings under a hand-glass, by seeds, which often ripen abundantly, or by division of the root, which should be done every three or four years, and it succeeds best in a light rich loamy soil.

TOBACCO, SWEET-SCENTED—NICOTIANA UNDULATA.

Linn. Pentandria Monogynia. Nat. Solaneæ.

An Australian plant bearing white flowers from May to September, and growing about two feet high. It is rather tender, and should be planted in a warm border, well protected during the Winter. It is propagated by division of the root, or by seeds, and requires a good rich soil.

TRITONIA—TRITONIA.

Linn. Triandria Monogynia. Nat. Irideæ.

The two most fragrant species of this genus of Cape bulbs are, the sweet-scented, *T. odorata*, bearing yellow flowers

early in May; and the squalid Tritonia, *T. squalida*, a name, as Mrs. Loudon remarks, very inappropriate, "as nothing can be more fresh and less squalid than its appearance." It grows about a foot high, and bears rose-coloured flowers in May, very beautifully marked. Both these species may be grown in a light sandy loam, in a sheltered situation in the open ground, and treated as directed for the Cornflags.

WATSONIA, BROAD-LEAVED, *or* SCEPTRE-FLOWERED—WATSONIA MARGINATA.

Linn. Triandria Monogynia. Nat. Irideæ.

This is a very handsome plant, bearing long spikes of pink flowers, three or four feet high, richly scented, and opening about August. It is one of the Cape bulbs, and being rather tender, is generally grown in a pot, in the greenhouse, during the Winter, and plunged in the open ground in Summer; but planted deep in a sandy peat soil, and protected from rain and frost, it will stand the Winter in the open air, and requires the same treatment as directed for the Cornflags.

HALF-HARDY ANNUALS AND BIENNIALS,

Or such as require to be sown on a hot-bed, or in pots in a frame or greenhouse, and may be turned out into the borders about May.

IPOMŒA, NIGHT-FLOWERING—IPOMŒA BONA-NOX.

Linn. Pentandria Monogynia. Nat. Convolvulaceæ.

A twining annual, of which there are white and purple varieties, bearing very fragrant flowers, which open at sun-set, and last only one night. It is a native of the West Indies, and properly a stove-plant, but if turned out rather late, in a warm and sheltered situation, in a light rich soil, it will flower in the open air; and it should have a light wooden trellis-work, or some loose strings suspended from above, round which it may twine.

MARVEL OF PERU, SWEET-SCENTED—MIRABILIS LONGIFLORA.

Linn. Pentandria Monogynia. Nat. Nyctagineæ.

This delightfully fragrant flower, though cultivated here generally as an annual, is properly a perennial; and if the roots be slightly covered in the Winter, or taken up, and preserved like those of the Dahlia, they will continue to flower for many years; its seeds however are so abundant, that it is scarcely worth while to preserve the roots. The flowers are

white, with very long tubes, and the stems are so weak that they require support, or they will lie straggling on the ground. When treated as a half-hardy annual, it flowers in July and August; but if sown in the open ground, it seldom does any good, as it will not then begin to flower till the end of September, when the cold rains of Autumn destroy the buds before they can open. It should be grown in light very rich soil, and its flowers are seen to the best advantage early in the morning, as the heat of the day soon causes them to fade.

ŒNOTHERA, NIGHT-SMELLING—ŒNOTHERA NOCTURNA.

Linn. Octandria Monogynia. Nat. Onagrariæ.

This is a biennial plant, the seeds of which should be sown in September, on a hot-bed, or in pots under glass, and the young plants protected from frost during the Winter; they may then be turned out in May or June, and will continue to flower till destroyed by the cold and damp of Autumn. Its flowers are yellow, and during the night are very fragrant.

SCHIZOPETALON, WALKER'S—SCHIZOPETALON WALKERII.

Linn. Tetradynamia Siliquosa. Nat. Cruciferæ.

The flowers of this plant are white, fragrant, and curiously cut. It will flower very well, sown in the open border, if the season be fine and warm; but is much better raised in pots on a hot-bed, and turned out into a light sandy soil, without disturbing the roots. The seeds are rather scarce, as they require to be ripened in a greenhouse, but it well deserves more extended cultivation.

THE ROSES.

ROSA.

Linn. Icosandria Polygynia. Nat. Rosaceæ.

These beautiful and favourite flowers have been cultivated from time immemorial, among the civilized nations of the eastern world, nor are they less admired now than formerly. Hundreds of new varieties are raised every year in England, France, and Italy, and they are everywhere considered of the first importance in the flower-garden. We have here divided them into two classes—the *shrubby* or *bush*, and the *trailing* roses.

The shrubby or bush roses are the most common in gardens, and may be grown either singly among other plants; in clumps or beds, either of the same kind, or of several varieties of different colours; or budded as standards of various heights, which should be planted separately in conspicuous situations, or in groves or avenues along the sides of the walks.

The trailing, often called climbing, creeping, or pillar roses, are excellent for covering trellis-work, arbours, or bare walls, especially when mixed with ivy, clematis, virginian creeper, &c. They may also be grown as standards, or allowed to trail along the ground or among other shrubs, as in their natural position.

We have seen a very beautiful, striking, and romantic effect produced by a *wilderness* of roses, or a plantation of the various dwarf or shrubby kinds, interspersed with some of the trailing varieties, and all allowed to ramble in the wildness of nature. The Honeysuckle, the Jasmine, or other plants of luxuriant growth, may also be added, according to taste, and will increase the beauty and variety of the mass. The rose-wilderness should be formed in rather a shady spot, partially surrounded with shrubs, especially towards the South, but open to the East, South-east, or West. It must be kept clear from large weeds, and if extensive, should be intersected by a few narrow paths.

None of the cultivated roses will flourish in a poor, shallow, or very sandy soil; they require a rich, rather stiff loam, with plenty of water during the flowering season, but very little in the Winter; and the earth should be regularly stirred and manured round their roots every Spring. If this latter operation is neglected, they will, in a few years, unless in a very deep and rich soil, lose their vigour, and begin to look weak and sickly; when this happens they must be taken up in the Autumn, and removed to another place, that the roots may have the benefit of change of soil; or if the soil in which they have been growing be removed to about a foot deep, and its place supplied with good rich earth, they may be replanted in the same spot. Indeed, it will be found advantageous, where it is praticable, to take them up and renew their soil, regularly every fourth or fifth year, pruning off all straggling roots at the same time; or if this cannot be done, at least to change their surface soil two or three inches deep.

Roses grown in pots require good drainage and plenty of

fresh air. Many of them are excellent for forcing, and when they have been brought on in a greenhouse, as soon as they are out of flower they should be plunged in the open ground, in a shady situation.

There is another method of obtaining flowers out of their proper season, which is often applied to the rose, besides forcing them; this is by retarding their growth, and it may be effected, either by rubbing off all the leaf-buds about April, soon after they have begun to grow; or by shortening all the flowering shoots, as soon as the flower-buds are just visible; after either of these operations the plant will proceed to form fresh shoots, which will flower much later than their usual time. It should also be remembered, that the period during which roses continue in bloom, may be much lengthened, by cutting off all the flowers as soon as they fade, which prevents the nourishment of the plant from being expended, in perfecting the seeds; this remark will also apply to many other flowering shrubs.

Almost all the Roses are very liable to be attacked by several kinds of insects, especially the Aphis, or green smother-fly. The most certain cure for this nuisance is, to take each branch separately, and with a soft brush carefully remove every insect; but this is rather tedious, and if the plants are under cover, or if a frame or hand-glass can be placed over them, fumigating with tobacco smoke is much more expeditious, and nearly as efficient; this is done either with a common tobacco-pipe, or fumigating bellows made for the purpose, and will destroy most kinds of small insects. According to Mr. Loudon, "The larva, or grub of the Lady-bird, should always be spared by gardeners, as it lives on the aphides.—Small singing birds also destroy great num-

bers." Roses are propagated, according to the sort and the object in view, by cuttings, layers, or suckers; or by budding or grafting on other stocks, usually of the common wild Dog-rose. Their pruning should take place in the Autumn, about October, which also is usually said to be the best time for transplanting them, though we have been told by an amateur that he finds Spring planting much preferable. Further directions for their culture will be found under the respective heads, Training, Pruning, Propagation, &c.

The following is a list of the most esteemed, sweet-scented varieties of shrubby and trailing Roses; to give the whole known number, amounting to above two thousand, would be impossible in a work like the present, nor have we attempted to arrange them precisely according to their species, as many of these are so confused in their distinctive characters, that it is scarcely possible to separate them with much accuracy.

SHRUBBY *or* BUSH ROSES.

WHITE.

The WHITE PROVENCE, a variety of *R. centifolia*, is a beautiful rose, with large, very double flowers. Like all the Provence or Cabbage roses its foliage is large, and rather rounder than that of most others, though somewhat coarse and usually not very abundant. It is well suited for the front of shrubberies, and flowers in June and July.

The WHITE MOSS, *R. centifolia var. muscosa*, is a variety of the Provence or hundred-leaved rose. Its flowers are pure white and in bud, when the delicate petals are just bursting

their mossy veil, it is perhaps more beautiful than when full blown. The Moss Roses especially, require a plentiful supply of water during the flowering season, and they thrive best in rather a moist situation. The White Moss succeeds better when budded on stocks of the common Dog-rose, than even on its own roots.

The BATH, or CLIFTON MOSS, very much resembles the common White, except that its flowers are slightly tinged with pink, or a very light flesh colour in the centre. It is rather new, and a very beautiful variety.

MADAME HARDY, is a new and splendid variety of the Provence Rose, with large, compact, double flowers, of a pure white, and well deserving of further cultivation.

The WHITE CHINA ROSE, *R. indica*, is much esteemed for its elegant and delicate flowers, and also for its delightful fragrance. It is rather tender, requiring protection during the Winter, when planted in the open air; but it is generally grown as a pot plant, for which it is well adapted. It may be propagated by cuttings taken off during the Summer, and planted under a hand-glass in light rich soil, or they will root more quickly if planted in pots on a little heat.

The WHITE SCOTCH ROSE, *R. spinosissima*, is a very pretty little shrub, and may be known from all other species, by its thorny stems, small leaves, and the profusion of its delicate flowers, which however are never very double. A bed of White Scotch Roses in full bloom, presents a most beautiful and striking appearance. It may be increased by layers or suckers, and prefers rather a peaty soil. In pruning the Scotch Roses, which should be done in October or November, the young shoots of the preceeding Summer must not be

shortened, as it is these which will flower the following season, but all dead wood and stray branches must be cut out from the bottom. There are innumerable varieties of the Scotch Rose, varying in shades of colour from white to a deep blush, all are very pretty, and require the same treatment.

BLUSH.

The COMMON BLUSH CHINA, *R. indica*, is perhaps the commonest of all our cultivated Roses. There is scarcely a cottage in any rural village, that has not a China Rose-tree in its garden, or climbing around its latticed windows. It flowers almost the whole year through, and on that account is frequently called the Monthly Rose. It is usually propagated by cuttings, which may be put in early in the Autumn, under a hand-glass placed in the shade, when they will be ready to plant out in Spring; or if put in about May, they will be rooted by the beginning of Autumn. The China Roses may be distinguished, by their flowering at the ends of the young branches and suckers which they send up from the root, as well as on the other parts of the plant; whereas other kinds never flower the first year upon these young root-shoots; on this account, the China Roses may be pruned down to the ground without destroying their flowering for the following season. This is a great advantage, and is especially noticed after a severe Winter, when the branches are often entirely killed.

The BLUSH TEA-SCENTED, *R. indica odorata*, is a beautiful variety of the common China Rose, and hybridised with the yellow China, has produced more than fifty subvarieties which are now cultivated. The Tea-scented rose is not quite hardy,

and should be grown in a slooping border of light rich loam, in front of a south-east wall, with a little protection during very severe frosts, but it will well repay this care by its large delicate flowers and great fragrance. It is propagated by layers, cuttings, or budding, and as a low standard not more than two feet high, it is exceedingly beautiful.

The COMMON or BLUSH PROVENCE, *R. centifolia*, is a well-known and rather old-fashioned rose, but nevertheless, one of the best kinds for the front of shrubberies. The Provence or *Cabbage* roses, so called from the resemblance of the buds before they are full blown to the heart of a cabbage, are all Summer flowerers, and esteemed for their great fragrance. They are propagated by suckers taken up in Spring or Autumn; by layers of the same year's shoots, which should be laid down about July or August, and will be rooted by November; or by budding on the common dog-rose stocks, but cuttings will not generally succeed. They are also among the best kinds for forcing.

The COMMON MOSS, is a variety of the Provence, and one of the most generally admired of all roses. The flower is certainly, very beautiful, and the loveliness of the opening bud is beyond description. When grown as a bush, however, the plant is apt to become straggling and unsightly, though as a standard its head may be kept in shape by pruning. This variety is excellent for forming baskets of roses, as the pegging down or layering of the branches prevents their straggling appearance; and they flower more freely in this way than in any other. Moss Roses prefer a situation shaded from the south, as the hot sun causes them to fade more rapidly than they otherwise would. They should also, every March, have a little mound of manure put round the bottom of their stems,

which may be concealed by a covering of moss or ornamental stones; this, with plenty of water in Summer, will make them flower abundantly.

The CRESTED MOSS, is a new and splendid variety of the Moss Rose, having its calyx not so mossy as the other kinds, but beautifully cut and crisped at the edges. The flower is large and handsome, and the plant is more compact in its habit than the common Moss.

MOSSY DE MEAUX, is a pretty little rose, bearing clusters of small pink flowers, which have a very neat appearance. According to Rivers, this is an exception to the general rule, that Roses prefer a cool soil, rather inclining to clay, as it seems to flourish best in light dry soils. It is propagated in the same manner as the Provence, of which it is a variety; and well deserves the great esteem in which it is held.

The MAIDEN'S BLUSH, is a variety of the old white Rose, *R. Alba*. It makes an excellent bush, and its flowers, which are very numerous, compact, and well-formed, are of the most delicate flesh-colour, deepening towards the centre to a light blush. It is propagated by layers, suckers, or budding.

The SWEET-BRIAR, *R. rubiginosa*, is a native of England, and cultivated chiefly for the fragrance of its leaves, which is stronger in an open than a shady situation. Several double-flowered varieties however have been raised which are very ornamental. It is propagated by seeds, layers, or suckers, and is an excellent plant for low garden hedges, as it grows stiff and is very thorny. This is the true Eglantine, so universally celebrated by our poets.

"The breeze of Spring, the Summer's western wind,
Robs of its odours, none so sweet a flower,
In all the blooming waste it leaves behind,
As that the Sweet-briar yields it: and the shower
Wets not a Rose that buds in beauty's bower,
One half so lovely."

CRIMSON.

The CRIMSON MOSS, or ROUGE DE LUXEMBOURG, is perhaps the handsomest of all the moss roses, and its scent is delicious. Its culture and propagation are the same as directed for the common Moss, and they are all well suited for standards from three to five feet high.

The CRIMSON PERPETUAL. There are many varieties called Perpetual or Autumnal-flowering roses, among which this is perhaps the handsomest; the beauty of its bud, the splendid colour of its full blown flower, and the long time during which it continues in bloom, rendering it worthy of the greatest admiration. As it requires a great deal of nourishment to keep it in flower in full vigour, it should occasionally be watered with diluted liquid manure or treated as directed for the common Moss-rose, and all the flower stalks should be cut off as soon as the petals begin to fade. It may be propagated by layering or budding, but plants produced from layers are considered to be the best.

The DAMASK ROSE, *R. Damascena*, is a well-known and highly esteemed species, of which the Perpetuals are varieties. It is propagated by layers, and forms a good stock on which some of the more tender kinds of Roses may be budded. It is principally from the petals of this and the Provence Roses, that rose-water, and otto, or attar of roses are made; and

though "six pounds of rose leaves impregnate by distillation a gallon of water strongly with their odour, yet, a hundred pounds will scarcely afford half an ounce of attar."

York and Lancaster, is a variety of the Damask Rose, having its petals striped with red and white. It is curious and very ornamental, and may be propagated by layers, or occasionally by budding, though it succeeds best on its own roots.

The Isabella. A few years ago, out of a collection of four hundred roses, this was considered to be one of the finest. Its flowers are very double and deep pink, but they are apt to be blighted, that is, the centre of the flower instead of being well filled with petals of the usual colour, opens green and hard. It is however a beautiful variety and well deserving of cultivation.

The Black Tuscany, is an old but excellent rose. Its flowers are very double and almost black, but they decrease in size as the plants grow older, unless well supplied with manure. It is propagated by layers or budding.

Brennus, is a very handsome variety, with large double crimson flowers, which it produces in abundance. It makes a good head as a standard and is very showy.

Beauty of Billiard, is a remarkably fine double crimson rose, and flowers freely.

The Crimson China, often called the Red Monthly Rose, is an excellent little shrub for the flower border; it never grows large, and continues in bloom nearly all the year, though its flowers are not suited for a room, as they are loose and soon fade.

The Fairy Rose, *R. Lawrenceana*, is a most beautiful little variety, and, as its name implies, a perfect rose in miniature. It is well adapted for pots and for forcing, though it grows more freely in the open air than under cover. When in pots it is frequently seen covered with small white insects, and looking very sickly, which usually arises from the want of fresh air and sufficient drainage; when this is perceived, the plant should be immediately repotted into light rich earth, well drained with broken potsherds, the roots having been previously disengaged from all the old soil, and it must then be placed out of doors, or in a more airy situation. It may be propagated by cuttings, or it succeeds well budded as a low standard, but it is almost too small for layering. There is a pink variety of this rose, but it is not nearly so pretty as the darker one.

The Cinnamon-scented Rose, *R. cinnamomea*, is a very fragrant species, flowering early, and prefering a dry soil and sunny aspect. It is also a good nosegay flower, as it lasts long without fading.

YELLOW.

There are several species of the Rose from which varieties bearing yellow flowers, have been raised. These are generally rather more tender and more difficult to bring into flower than most other varieties, especially in cold damp seasons, when their buds often decay before they are half open. Among the best hardy yellow Roses are the Yellow Scotch, Harrisonii, and Yellow-haired Laddy, all of which make excellent standards, three or four feet high, and will sometimes flower very abundantly. The yellow Austrian, or Austrian Briar, is an

exceedingly beautiful Rose. Its flowers, which are single, are yellow outside and deep orange within, but it is by no means common, as it seldom flowers well. It is said to succeed best in an eastern or western aspect, as the south is too sunny for it. The yellow Noisette is a very fragrant Rose and quite hardy; but the yellow China, which is very beautiful and fragrant, requires protection during the Winter and is usually grown in pots. Both these are propagated by cuttings, and succeed better on their own roots, than when budded or grafted.

TRAILING, CLIMBING, *or* PILLAR ROSES.

WHITE.

MARIA LEONIDA, is a beautiful pillar rose, with fine, glossy, evergreen leaves, and large delicately white flowers, but in wet seasons the buds are apt to decay before opening, unless slightly protected from the heavy rains. Like most of the trailing Roses, it may be propagated by layering, early in the Autumn, the long shoots which it sends up from the roots, or by budding.

The FRENCH EVERGREEN, is an exceedingly pretty and elegant little rose, though it does not grow so fast or so high as some of the others. Its small ranunculus-shaped flowers are pure white and very fragrant, and the green of its foliage is remarkably bright and lively. It is propagated by cuttings or layers.

AIMÉE VIBERT, a sub-variety of the Noisette, is an excellent pillar rose, greatly resembling the French Evergreen, and

growing much more luxuriantly, but the foliage is not so lively and elegant, and the flowers are looser and rather larger, but not so fragrant.

The WHITE BANKSIAN, *R. Banksiæ*, is perhaps the most elegant and graceful of all the roses, and it is one of the most fragrant; but it will scarcely flower in England without the protection of a greenhouse. If however it could be naturalized in this country, its beautiful clusters of double white flowers would well repay the trouble. It is usually propagated by cuttings, and if planted in a light, rich, peaty loam, will often grow six or seven feet high. We have seen it recommended to grow the White Banksian in a good-sized pot, and train it spirally round a pyramid or open cylinder of wood or wire trellis-work, placed within the rim of the pot; and we have no doubt it would flower extremely well thus treated.

NOISETTE MULTIFLORA, is chiefly admired for its abundance of flowers, which are showy but not very well formed. It is rather a slow grower, but when it has once got up, it continues to flower very freely for many years. The Noisette Roses, of which there are many varieties, are so called from the name of the person who first introduced them, and are chiefly distinguished by bearing their flowers in large clusters at the ends of the branches only. They are propagated by layers or cuttings.

THE WHITE BOURSAULT, is a handsome rose, and often grows to a great height. There are several beautiful specimens of this and some of the other Boursaults, at the Botanic Gardens of Edinburgh, trained up young live poplars, which have their lower boughs cut away, as the roses grow, leaving every year a head of the poplar at the top. A very pleasing

effect is produced in this way, and the live poles, of course, last much longer than dead ones. The Boursault Roses are a splendid tribe, distinguished by their long, purplish-red, almost thornless shoots, and the early appearance of their flowers.

THE MUSK ROSE, *R. moschata*, is an elegant species, and very fragrant, especially in the evening,—

> "When each inconstant breeze that blows
> Steals essence from the musky rose."

It is usually trained against a wall, as its branches are too weak and slender to bear the weight of the flowers without support. It grows rapidly and flowers freely; and is propagated by cuttings or layers.

There are several very beautiful white trailing roses, which are *not* sweet-scented; among these are ADELAIDE D'ORLEANS, an evergreen, and a very abundant flowerer; and FELICITÉ PERPETUEL, a most elegant little cream-coloured rose.

BLUSH.

The COMMON AYRSHIRE, is a remarkably quick-growing rose, as are all those of the Ayrshire family. Its flowers are not very double nor very sweet, and its chief excellence is in the rapidity of its growth. This however is sufficient to recommend it for many situations, where a cover is required in a short time; but as its foliage is rather scanty, and not evergreen, it should generally be mixed with ivy. In pruning the Ayrshire Roses, which indeed they seldom require, their long shoots should never be shortened.

Ruga, is a variety of the Ayrshire, and one of the most delicately tinted of all the roses; its flowers are white at the outside, gradually deepening to a very light blush in the centre, and extremely fragrant. It grows rapidly and gracefully, and flowers freely, but its foliage is rather small and scanty; it is however an excellent pillar rose. The Ayrshire Roses are propagated by layers or budding, and make elegant and graceful standards from four to six feet high.

Queen of the Belgians, is also a variety of the Ayrshire, scarcely to be distinguished from Ruga, but its flowers are rather closer in the petals, and not quite so delicate.

The Celestial China, is a very handsome, strong-growing rose, with large very double flowers, which however are extremely liable to be blighted; and when this happens, it quite destroys their beauty.

Noisette Grandiflora, is a large, well-formed, and delicate rose, and a very rampant grower; and if not checked, by being planted in rather light soil, will run all to wood, and produce no flowers. Its foliage also is rich and handsome, and it is altogether a very desirable rose.

Sir Walter Scott, is a fine Noisette Rose, producing abundance of flowers of a dark blush colour; it is a rapid and strong grower, and well adapted for a pillar rose, as are all the Noisettes, for when trained against a wall their large clusters of flowers cannot show themselves to so great advantage.

The Seven Sisters Rose, is also a variety of the Noisette, a luxuriant grower, and flowers abundantly in very large clusters, but it is rather shorter lived than most roses.

CLARISSE HARLOWE, is a new rose, and said to be very splendid.

CRIMSON.

The CRIMSON BOURSAULT, is a remarkably handsome flower, especially when first opened, as its colour is then very rich and glowing, though it soon changes to a dusky purple. It grows luxuriantly, and is propagated by layers or cuttings.

ATKINSONIA or CALYPSO, is a variety of the Boursault, and one of the earliest and most abundant flowerers of all the trailing roses yet introduced. In colour it resembles the Crimson Boursault, and has the same peculiarity of changing when about to fade; but it may be distinguished at once by its profusion of flowers, and by each petal being marked with a streak of white down the middle. The *tout ensemble* of this rose strongly recommends it.

CHARLES THE TENTH, is a fine rose, in colour resembling the Red China, but with a mixture of purple. It is elegant but rather slender, and not a very rapid grower. It may be propagated by cuttings or by budding, and succeeds well as a moderate standard.

POMPONE POURPRE, is a variety of the Provence Rose with handsome purple flowers very double.

YELLOW.

There is only one trailing yellow rose, the YELLOW BANKSIAN, and that is unfortunately devoid of scent. It is however a beautiful little flower, but requires a warm situation to bring it into blossom.

ON THE GENERAL MANAGEMENT OF THE FLOWER-GARDEN.

The main object of the flower-garden, is to please the eye; therefore at the commencement, regard must be had to those forms, and combinations of forms, which experience has found to give the greatest degree of pleasure to this organ. The first thing to be remembered is, that the eye most delights to rest upon those objects whose parts are all in proper proportion to one another; and the effect, of small gardens especially, is very frequently destroyed by a want of attention to this principle. Thus, perhaps, the centre of a town garden is occupied by a grass-plat, round which runs a gravel walk, seldom above two or three feet wide, which is more than is necessary for one person, but not enough for two to walk abreast; beyond this will be a bed in front of the surrounding wall, very frequently divided from the walk by a narrow grass edging, which is troublesome to mow, and which takes double or treble the time and expense of box, to clip and keep in order. Gardens laid out in such a way as this, will always have an air of clumsiness about them; however well they may be filled with the most beautiful

flowers, they will never look elegant. Gravel walks should be from three to four feet wide at least, even if they encroach considerably upon the grass; and we should always recommend box as an edging, unless the size of the garden will allow of a five or six feet walk, with a border of grass not less than eighteen inches wide, on one or both sides; where this can be done however, grass should, in our opinion, have the preference. In all flower-gardens, especially if their shape be long and narrow, it will greatly add to the effect, if, at the farthest extremity a finish or boundary can be made, on which the eye may rest with pleasure, such as a shrubbery, a sloping grass mound, or an arbour with shrubs on each side.

The flower-garden must be kept in high order; those who will not take the trouble to attend to this, had much better have no garden at all, as nothing can look more slovenly than flower-beds covered with weeds, gravel walks carpeted with moss and grass, unmown lawns full of daisies and dandelions, or box edgings dead in some parts and six or eight inches high in others. During the Summer, the beds and walks must be kept constantly weeded, and the gravel raked and rolled occasionally, the lawn should be frequently mown, once a fortnight at least, and everything but the finer kinds of grass rooted out; box edgings should be regularly clipt to about two or three inches above the bed, and turf edgings must especially be kept smooth and neat. The usual directions, however, for keeping the garden in order, for planting shrubberies, arranging flowers according to their height and colour, laying out beds, grass-plats, &c., &c., may be found in almost all the numerous works treating upon the subject, and our space will not permit us to enter further into these details. But we have endeavoured under the following heads to give clear

and accurate directions for the most essential operations connected with the cultivation of flowers.

SOIL, DRAINAGE, AND MANURE.

In the management of a garden, three things are absolutely necessary to the health of the plants, viz.: to have the soil well drained; to keep it light and open; and to refresh it regularly with manure or rich compost. Thorough drainage should be effectually secured, before the garden is planted, by soughs, and by trenching the soil to the depth of two or three feet; always bearing in mind, that, in this operation, the top soil to about six or eight inches below the surface, unless very bad, should be kept at the top, as it is almost sure to be better than that which lies below it. The soil must be kept light and open by constant working, and stirring about, and by having plenty of sand mixed with it, if it is at all stiff.

The flower-beds should have a dressing of manure or rich compost regularly every Spring, about February, digging or forking it in between the plants. Rotten dung is the best general manure; bone-dust is also excellent, or bones of any kind, coarsely broken, and buried in the soil at any season, will be found of great use; and there are always plenty of these in every family, which with little trouble might be thus advantageously appropriated to the flower-borders. Respecting the utility of bones as manure, see Mr. Hoare's work on the cultivation of the Vine.

The following will be found an excellent plan, in a small garden, in order to keep the soil constantly refreshed with new and wholesome food for the plants. Take rotten dung, fresh loam or garden soil, old turf chopped up with the spade, and

common sand, in equal quantities; mix them well together, and lay them in a heap exposed to the weather for a few months; and wherever a fresh plant is put in, or seeds are sown, take out a spadeful or two of the old soil, and replace it with some of the compost. The old soil taken out may be mixed with the next prepared heap of compost, which should be ready for use as soon as the first is exhausted.

TRANSPLANTING.

Most plants may be removed at any season, provided they are taken up with a ball of earth round their roots, and replanted immediately. The best time however is early in Autumn, soon after they are out of flower, or when the leaves begin to fall; though Spring planting, that is about February, will do nearly as well, and for most half-hardy plants, is perhaps better than Autumn. Transplanting should be performed, when the soil is sufficiently dry not to clog the spade, and a cloudy sky at the time is preferable to a bright sun.

Deep planting, especially with respect to trees and shrubs, is always to be avoided; the heart or collar of the plant, that is the point where the stem and the root join, should be on a level with the surface of the ground.

When a tree or shrub is transplanted, all straggling or decayed roots should be pruned off, and the remainder carefully spread out, nearly horizontally, before the soil is thrown upon them. Annuals should be transplanted when very young, especially those which have tap or spindle-shaped roots, as the Eschscholtzia; as soon as they have opened their third pair of leaves they are quite old enough.

When plants are removed after they have begun to grow, they will usually require to be shaded and watered, till the roots have re-established themselves. A flower-pot turned upside down over them is sufficient shade for small plants; and for larger ones any other means may be used which will protect them from the mid-day sun.

TRAINING.

Much of the beauty of a flower-garden depends on the neatness with which it is kept, and therefore it is of the first importance that all those plants which require it, should be regularly and carefully trained, so as not to interfere with each other or lie straggling on the ground. For training or tying up most border plants, nothing is better than a few light willow or hazel rods, from eighteen inches to three feet long, and which may be had of the basket-makers, at about one shilling a hundred.

Roses, Honeysuckles, and many other trailing and twining plants, have an excellent effect when trained spirally round a pole, eight or ten feet high. Larch poles are the best for this purpose as they are found to be exceedingly durable, and they may usually be bought for fourpence or sixpence each. But in training twiners in this manner, care must be taken to twine them round the pole in their natural direction, (see Honeysuckle, page 25.) Many plants, especially those which bear upon lateral shoots, as the Ayrshire Roses, the Honeysuckle, the Vine, &c, have their crop of flowers much increased by spiral training, as this tends to check the rapid flow of the sap. For the same reason, these plants when grown against a wall, flower more abundantly if trained in a zigzag direction than when perpendicular. Pointing the branches towards the ground

has the same effect, and standards of the Ayrshire and some other roses, may be made one mass of bloom, by training their long shoots on strings or wires, stretched from the head and fastened in the ground several feet from the root.

If a garden happens to possess the stump of an old tree, this may be made a most beautiful object by covering it with ivy, clematis, &c., and it is frequently found worth while to plant such a stump merely for this purpose.

Some of the more tender climbing plants, as the Calampelis, Maurandia, &c., when turned out into the borders in Summer, are usually planted near a light trellis-work to which they may be trained. If it is in a sunny situation, this trellis-work should by all means be made of wood in preference to iron; as on a warm bright day, the metal will frequently become heated to such a degree as to scorch the young shoots trained against it. We have seen a fine plant of Calampelis scabra entirely destroyed as soon as it came in contact with an iron-wire trellis-work.

PRUNING.

When a plant is to be pruned, the object is most frequently to increase its crop of flowers; the first thing therefore to be considered, is, upon what sort of branches the flowers are produced; whether upon those of the same year's growth, upon those which were produced the preceeding season, or upon wood of several years duration. For instance, the China and Noisette Roses flower upon wood of the same year's growth; that is, those branches which were produced in the Spring bear flowers in the Summer, consequently, as pruning is peformed before the young wood has made its appearance,

it is not of so much consequence what sort is cut away. But the Scotch roses produce their flowers upon the wood of the preceeding year, so that care must be taken, not to cut this off more than can be avoided. We have had whole beds of Scotch roses, spoilt by an ignorant gardener clipping the tops of the plants, in order to give them a sloping direction, by which, of course, he cut off all the bearing wood, and destroyed the flowers for the next season.

All shrubs which are quite hardy, should be pruned in the Autumn, about October or November; but Spring is the best time for the more tender ones, as the wounded branches are liable to be killed by the severe frosts of Winter.

PROPAGATION.

The various modes of propagating plants may be divided into two classes, the *natural* and the *artificial*. The modes employed by nature, are seeds, suckers and offsets, and creeping stems; to which have been added, by human ingenuity, the artificial methods of layering, inarching, budding, grafting, and striking by cuttings, leaves, &c., though the first two of these are very occasionally natural.

In propagating by seed, the chief point to be attended to, is shallow sowing, a covering of earth sufficient to exclude the light is all that seeds require, and they are frequently injured by being sown too deep.

In raising many half-hardy annuals and biennials from seed, under glass, it will be found an excellent plan to sow them in small pots, a few seeds in each, and turn them out into the borders without breaking the ball of earth, instead of pricking them out as is usually practiced; and in this case no shading

will be necessary. It has been found by experience, that soaking seeds in hot water for an hour or so, or even boiling them for a few minutes, forwards their germinating powers considerably; especially if the seeds are hard and dry from long keeping.

For taking off suckers and offsets, and dividing roots and creeping stems, the best time is soon after the plants have entirely done flowering, which is usually in the Autumn, though in most cases early in spring will do nearly as well.

Of the artificial methods of propagation, layering and striking by cuttings are the most important. Layering is a more certain mode, and produces finer plants in a shorter time than cuttings; but as a layer generally requires a whole branch of which several cuttings could be made, where *number* of plants is the object it is not so much resorted to.

In forming a layer it is usual to make the cut on the under side of the branch, but it will generally be found better to make it on the upper side, or to split the branch through the middle, keeping the split open with a small stone or a chip of wood; some plants, however, which strike very readily, as the pansy, require no cut at all. A handful of sand placed round the cut part of a layer will greatly facilitate its rooting.

The usual time for layering most herbaceous plants, as pinks, carnations, pansies, &c., is when they are in full flower. Roses should be layered about July, taking off all the flower-buds, but none of the leaves from those branches which are laid down; and they will mostly be rooted by September or October. Evergreen shrubs as laurels, aucubas, &c., may be layered in Autumn or early in Spring, but they will not be fit to transplant in less than six or eight months, sometimes much longer.

A cutting is very similar to a layer, except that as it is entirely disconnected with the parent plant, and must establish itself solely from its own resources, it requires rather more careful management. The soil for all cuttings should be light and sandy; and as it is of great consequence that much moisture should not remain about the part inserted in the ground, it is usual, in striking all tender plants to place a layer of sand on the surface, of such a depth that the end of the cutting may just pass through it and into the soil beneath.

When planted in pots most cuttings will be found to strike more readily if the end be made to touch the side of the pot, or a piece of broken potsherd, or other porous substance placed in the soil, as by this means it will have a more regular supply of moisture. Great care also must be taken to let the pots be well drained, with plenty of broken pieces at the bottom; and to press the soil close about the ends of the cuttings, otherwise they will be sure to fail.

As a general rule, cuttings of all shrubby plants should be made of those branches whose wood is tolerably ripe and firm, either of the same or the preceeding year's growth; or at all events they should have a small piece or *heel* of ripe wood, at their rooting ends. But some kinds, as the Cape Heaths and Epacrises, will only strike from the very young and tender shoots; while cuttings of the Myrtle, and some others must be formed of half-ripened wood. Most hardy shrubs, whether evergreen or deciduous, as laurels, roses, privet, gorse, &c., may be propagated by cuttings planted in the open ground in any shady situation, (that is shaded from the mid-day sun) and many of them will not even require the protection of a hand-glass.

Cuttings of succulent plants, as the Cacti, and some Geraniums, when the stems are very juicy, should be laid by for some days before planting, otherwise the abundance of sap will cause them to rot in the ground. Most of the monkey-plants (mimulus,) and some others which root very readily, are frequently struck by simply throwing the cuttings into a pan or cistern of water.

Cuttings are called *slips*, when they are formed by stripping off a young side shoot from an older branch in rather a downward direction, and without using the knife; in such a manner as to take off with it a small strip of the old wood and bark, the end of which is then cut short and smooth, and the slip is planted and treated as a cutting.

Cuttings of pinks and carnations are usually called *pipings*, from a common practice of forming the cuttings by pulling the ends of their tubular pipe-like shoots, so as to separate them at a joint; but it is now found much more certain, to cut them off just below a joint, as directed under the head Pink, at page 44. Many plants may be propagated by merely planting the leaves, and treating them as cuttings; and though this is seldom practised except with greenhouse plants, yet instances have been known of the Mint, the Watercress, the Aucuba, and many other kinds being propagated in this manner.

The usual time for planting cuttings of those hardy shrubs which require to be struck from ripe wood, as the China rose, the clematis, the currant and gooseberry, the privet, &c. is early in Spring, before the young leaves begin to open. But those which strike from young, or half-ripened wood, as the laurel and myrtle, may be put in about the beginning of Autumn.

Budding, in the flower-garden, is most usually practised in the propagation of the rose; and the best time is about July or August, as at this season the bark *runs*, that is separates from the wood, better than at any other. We would strongly recommend the operation of budding to amateur cultivators, as it is a simple and pleasing process, and there is scarcely a plant to be compared in beauty with a fine standard rose.

About March is the season for grafting and inarching, though these belong more to the orchard and greenhouse than to our present subject.

THE MANAGEMENT OF

PLANTS IN ROOMS.

Plenty of light and air, with a moderate but regular supply of moisture, are three essentials to the healthy existence of plants; and when confined in dark and close rooms, it is absolutely impossible to keep them uninjured more than a few days; though, in such cases, if they can be removed for a day or two to a more healthy situation, they will be greatly benefited, and may be kept alive much longer.

All plants in rooms should be placed as near the light as they conveniently can; though, during the Summer, most kinds do not require the glaring heat of the mid-day sun, which indeed is injurious to them, as it evaporates the moisture in their leaves faster than it can be supplied by the roots, and causes their flowers to fade sooner than they otherwise would. When, however, the plants begin to be infected with insects; when the stems are drawn up long and thin, and when they, with the leaves and leaf-stalks look pale and sickly, it is a sure sign that they have not sufficient light and air.

The unnatural dryness of the air in living rooms, is perhaps the greatest obstacle to the health of plants; and for this we can scarcely recommend a remedy, except frequently

sprinkling the leaves with water. It might also be found useful to keep a saucer of water standing behind or amongst the plants, where it would be out of sight.

It is important that the leaves of plants should be kept free from dust; and therefore, during the Summer, they should be set out of doors, at least once a week, and watered over the tops from the rose of a watering-pot; the outsides of the pots should also be examined at the same time, and if dusty or mossy, should be carefully washed clean.

Plants in pots require good drainage, and if this is neglected their leaves turn yellow and drop off, and their young shoots lose their vigour and become a prey to insects. A handful of broken potsherds placed at the bottom of the pot is the usual mode of draining, and is very simple and effectual; but we would suggest that coarsely broken bones would answer equally well, and at the same time afford excellent manure to the roots.

If the pots are well drained, it is not of much consequence how often the plants are watered; but it is generally a bad plan to let them stand in saucers of water, as is frequently done, because this must evidently counteract the effects of the drainage; nevertheless, some plants which naturally inhabit moist situations, and whose roots are therefore constituted accordingly, require this constant supply; among such are the Lobelias, Balsams, Mimuli, &c.

Too little water is as certain destruction to vegetable life as too much, therefore the earth in the pots should never be allowed to get thoroughly dry and baked up. When however this does happen, and the leaves and young shoots begin to droop, the plants should be removed to the shade, the earth well watered, and the leaves sprinkled or syringed; and it will

generally be found beneficial, in such cases, to re-pot them into larger pots, filling up the space with good fresh soil. Sudden changes of temperature are extremely injurious to plants; therefore, during the Winter, they should be removed from the windows at night into the interior of the room; they should never be allowed to stand in a draught of cold air; and the water given to them should be milk-warm. A French florist states that he has ascertained by experiment, that a sudden change of temperature of only five degrees, is sufficient to produce the premature falling off of the petals of the Camellia, which so frequently happens in rooms, without any apparent cause.

For the management of bulbs in glasses, see Hyacinth, page 36.

To preserve nosegay flowers in water, always cut them with a *sharp knife*, not with scissors. If they are at all withered before placing them in the water, cut off about a quarter of an inch from the bottom of each stem, and do the same every few days, as this will constantly keep the vessels and channels through which the water is conveyed, free and open. Never let the sun shine upon them, and take care to supply them regularly with fresh water.

BORDER PLANTS.

The following list contains only such plants as are suited for the flower-border, and which are *not* sweet-scented. It has been compiled with great care, and may be relied upon as very select.

PERENNIALS.

ALYSSUM, *yellow;* showy, and flowers early.

AMERICAN COWSLIP, *(Dodecatheon,)* should be grown in the shade.

ANEMONE, *common garden or poppy,*
———, *blue mountain,*
———, *star,*
} Should be grown in rich sandy soil, "and to have a bloom every month, plant every month."

ASTER; many species, among which are the *Michaelmas Daisy.*

CAMPANULA, *pyramidal,*
———, *double white,*
———, *double blue,*
———, *small white,*
} The first of these is very handsome, and should be grown in light rich soil, but without animal manure. All are hardy.

CHELONE, *scarlet;* a handsome flower, of easy culture.

CHRISTMAS ROSE, *(Helleborus niger,)* pretty, and flowers very early.

COLUMBINE, *(Aquilegia,)* several species; among the best are, the *Siberian,* the *variegated,* and the *alpine.*

DAISY; several ornamental varieties, mostly originating from the wild one.

DAHLIA; a fashionable flower, but too large for small borders.

DELPHINIUM GRANDIFLORUM; very handsome, with tall spikes of dark blue flowers.

DOG'S-TOOTH VIOLET, *common*,
———, *white*,
———, *yellow*,
} pretty bulbous-rooted plants, flowering early. The yellow flowers best in pots.

FORGET-ME-NOT; a wild plant, but very pretty; should be grown in a moist situation.

FRITILLARY; several species, among which is the *Crown Imperial*; all are early flowerers, and will grow in the shade of trees.

GENTIAN, *blue*; should be grown in a sandy soil with a little peat.

GLOBE-FLOWER, *Europæan, (Trollius,)* showy and of easy culture.

HEPATICA; several varieties, will not flower well till some years after planting; should be moved while in full bloom.

IRIS, *Portuguese*,
— *Chalcedonian*,
— *great bulbous*,
— *snake's-head*,
} A splendid tribe; the *fleur de lis*, properly *fleur de Louis*, of the French.

LOBELIA, *cardinalis*,
———, *splendens*,
———, *fulgens*,
} frequently called *cardinal-flowers*; very handsome, but rather tender.

LUPINE, *blue;* handsome flowers and foliage.

LYCHNIS, *double scarlet;* should be frequently divided early in Spring.

MONKEY-FLOWER, *(Mimulus,)* many varieties, requires plenty of water.

PÆONY, *red,*
———, *white,*
———, *tree,*
} splendid plants; the *tree pæony* flowers early, and requires protection from the late frosts.

PEA, *everlasting;* an ornamental climber.

PERIWINKLE, *small,*
———, *large,*
———, *double,*
} well-known creeping plants, of the easiest culture; all natives of England.

PHLOX, *tall purple,*
———, *tall white,*
———, *vernal,*
} The first two flower in Autumn, and are very showy; the last flowers early and is excellent for rock-work.

POTENTILLA; several very pretty varieties.

RANUNCULUS, *common garden,*
———, *aconite-leaved,*
} The first a well-known border flower, of which there are innumerable varieties. The other a plant with dark-green leaves, branching stems, and small double flowers of a pure white.

SAXIFRAGE, *double white;* pretty, and flowers rather early.

SNAP-DRAGON, *(Antirrhinum,)* many varieties, the best of which is the variegated.

SPIDERWORT; several species, blue, pink, and purple.

SQUILL; many species, blue, white, and pink; all bulbous-rooted.

STAR OF BETHLEHEM, *common;* a bulbous-rooted plant, with white starry flowers.

ST. JOHN'S WORT, *large-flowered;* showy, grows well under trees.

SUN-ROSE, *common, (Helianthemum,)* many varieties, yellow, orange, red, and double-flowered; excellent for rock-work.

VENUS'S NAVEL-WORT, *blue;* a beautiful little flower, opening very early.

VERONICA; many species, mostly blue or pink, some very ornamental.

ANNUALS AND BIENNIALS.

ASTER, *china,*
——— *tenellus,*
} The first a common annual, the best of which are called *German asters;* the other a pretty little blue flower.

BARTONIA AUREA; very showy; flowers of a glossy gold colour, but foliage coarse.

CALANDRINIA *discolor;* a large showy, purple flower.

——————*speciosa;* small bright crimson.

CALENDULA PLUVIALIS; large white flowers, brown underneath.

CANDYTUFT, *rocket;* flowers white, in large spikes very showy.

CLARKIA PULCHELLA; white and pink varieties, elegant.

CLINTONIA PULCHELLA; a very beautiful little flower, blue, white, and yellow.

COLLINSIA *bicolor;* lilac and white.

——— *grandiflora;* lilac and blue, showy in large clumps.

CONVOLVULUS *major;* a beautiful climber, many varieties.

——— *minor;* very showy.

DIDISCUS CERULEUS; half-hardy, with umbels of small bright blue flowers.

ESCHSCHOLTZIA *californica;* bright-yellow, very showy.

——— *crocea;* like the former, but orange coloured.

EUTOCA VISCIDA; bright blue, very pretty.

GAILLARDIA *picta;* very handsome, a perennial in the greenhouse.

———*Drummondii;* like the former, but with darker flowers.

GILIA TRICOLOR; a pretty little flower, very hardy, and will sow itself after the first year.

GROUNDSEL, *double purple, (Senecio,)* a perennial in the greenhouse.

HAWKWEED; several varieties, red, yellow, straw, and orange-coloured.

INDIAN PINK; a beautiful annual, exhibiting in its flowers an almost endless variety of shades, from deep crimson to pink and white.

KAULFUSSIA AMELLOIDES; bright blue, very pretty; flowers in two months after sowing.

LARKSPUR, *dwarf or rocket;* many varieties from white to deep purple.

LOASA *aurantiaca* or *lateritia;* a curious climber, with deep orange-coloured flowers; leaves sting like nettles.

LOBELIA GRACILIS; blue and white, makes very pretty beds.

LUPINE, *Cruikshank's;* blue, yellow, and pink, very handsome.

MALLOW, *large-flowered, (Malope trifida,)* a splendid flower; red and white varieties.

MARVEL OF PERU; several varieties, white, yellow, and rose-coloured; only seen to advantage early in the morning.

NEMOPHILA *insignis;* blue and white, very beautiful, will sow itself after the first year.

——————— *atomaria;* white spotted with dark purple.

NIGELLA, *Spanish;* blue and white varieties, showy and curious; commonly called *Love in a mist.*

ŒNOTHERA; many species, white, yellow, and pink or purple.

PHEASANT'S EYE, or FLOS ADONIS; a beautiful little crimson flower, with elegant foliage.

PHLOX DRUMMONDII; a splendid, half-hardy annual, varying in colour from pale pink to deep rose.

RHODANTHE MANGLESII; a very beautiful and delicate flower of a light rose-colour.

SALPIGLOSSIS; several varieties, from dark purple to pale blue or yellow, and beautifully marked.

SCHIZANTHUS; several showy species.

TROPŒOLUM *peregrinum;* a climber, with curious yellow flowers; sometimes called *canary-bird.*

———— *majus*, or *Great Naturtium;* several varieties.

———— *minus;* like the former, but smaller; one variety with double flowers.

VENUS'S LOOKING-GLASS, *(Campanula,)* several species, purple and white.

VIRGINIAN STOCK; a common annual, varying in colour from white to pale purple.

ZINNIA ELEGANS; splendid when finely grown, but requires to be raised on a hot-bed; many varieties.

THE STRUCTURE OF PLANTS.

In the study and cultivation of plants, it is of the first importance to have some knowledge of their general structure, of the relations which their various parts bear to each other, and of the internal workings of their vital system; we shall endeavour, therefore, in the present chapter, to give a short and accurate explanation, first of their *external* structure.

Let the reader procure a specimen of any plant, which possesses most of the organs usually met with, such as the common Heart's-ease, *(viola tricolor,)* examining the various parts as we proceed.

When a seed germinates in the ground, the embryo plant shoots out in two directions, upwards towards the light and air, and downwards into the earth in search of food. The downward shoot, which is the *root*, assumes various forms in different plants; either dividing into a number of small fibres, in which case it is called a *fibrous* root, as in the Heart's-ease, and most trees, shrubs, and herbaceous plants; or increasing greatly in thickness, tapering towards the extremity, and sending out only a few small fibres, when it is called a *spindle-shaped* or *tap* root, as in the carrot and radish; or, as in the dahlia and orchis, swelling into fleshy tubercles of various forms and sizes, and distinguished as a *tubercular root*. It must be remembered, however, that the tubercular root is different from what is called a *tuberous* root, a true tuber, as the

potatoe, being no root but "a short, fleshy, underground stem, produced at the ends of slender subterranean branches;" and it may be known by having buds or eyes upon its surface, which a true root has not.

The shoot which a germinating seed sends upwards towards the light and air is the stem, and the point of union between the stem and the root is called the *heart* or *collar*. The stem, like the root, varies considerably in form; in most trees and shrubs it is solid, cylindrical, and branched; in the reeds and grasses it is hollow; and in the cacti it is triangular, flat, or globular. Bulbs, as the lily and hyacinth, are in reality short stems, covered with rudimentary leaves in the shape of scales. The cormus also, (which is often called a bulb, but which differs from the true bulb in being solid, and having only a few dry brown scales on the outside, as in the crocus and tulip,) is a short thickened stem, producing roots at one extremity and leaves and flowers at the other.

The ramifications or upper divisions of the stem are the *branches*, and these produce upon their surface *buds*, distinguishing them from roots, which do not properly produce buds. These buds expand into *leaves*, the broad parts of which are called the *blades*, and the stalks, *petioles;* and at the *axils* of the leaves, or the points where they join the stem, are frequently found small leaves having no petioles, which are called *stipules*. The whole of the branches, stem, and root of a plant, are called the *axis*, and this with the leaves and stipules constitutes the *organs of vegetation*, "so named because they have no other destination than to enable a plant to live and grow, and perform those vital actions which are not connected with the office of spontaneous propagation."

The *organs of fructification*, are those which "enable a plant by fructifying to multiply its species spontaneously," and these organs are contained in the flower, the various parts of which are named as follows:—the stalk on which the flower is borne, and which, in the heart's-ease and many others, rises from the axil of a leaf, is the *peduncle;* and near the top of this are two small green scales called *bracts* or *bractæ*. At the extremity of the peduncle is the flower, the internal and more important parts of which are protected by two coverings called *floral envelopes*. The outer of these, which is generally green, and in this instance divided into five distinct lobes, is the *calyx*, and each lobe is called a *sepal*. The second floral envelope consists of a number of leaves or *petals*, of various colours, the broad parts of which are called the *limbs*, and the points where they are all united in the receptacle or centre of the flower, the *claws;* the petals taken collectively form the *corolla*, and when they are all united by their edges, the flower is said to be *monopetalous*, or one-petaled, as in the primrose and speedwell.

Within the floral envelopes are the *stamens*, which in the heart's-ease are five in number, thin, flat, and of a light-yellow colour. These are divided into two parts, the *filament*, which is usually a slender thread-like stalk, bearing on its point a yellow or brown head called the *anther*, which contains the fertilizing substance known by the name of *farina*, or *pollen*. Surrounded by the stamens is the *pistil*, consisting of three parts, viz.: the *germen* or seed-vessel, which in this instance is an egg-shaped body, tapering to a crooked point called the *style*, at the end of which is the *stigma*, a round head, having a small hole in one side. When the pistils and stamens have arrived at maturity, the anthers swell, and at last

burst, scattering the inclosed pollen upon the stigma, which being at that time covered with a glutinous substance, retains it, till it has completed its office of fertilization. When this is accomplished the flower fades, the germen swells and forms the fruit, and at length, when the seeds which it contains are ripe, bursts and scatters them upon the ground. Each seed consists of a thin shell, enclosing a quantity of fleshy matter called the *albumen*, in the midst of which lies the embryo plant, "which is supposed to be nourished by the albumen until it breaks the shell and is strong enough to gain its food for itself," when it shoots out into roots and branches and again performs the office of clothing the earth, and multiplying its species.

Having thus examined the various external organs of plants, let us now consider their *internal* structure, that exquisitely beautiful arrangement by which nourishment is conveyed to the remotest leaf, and health and vigour promoted through the whole system.

The main constituents in solid vegetable substance, are carbon, humic acid, potash, lime, silex, &c. and of these with a few others, combined and arranged in various ways, is composed every part of the most perfect plant. The three principal forms in which these substances are found, are distinguished as *cellular*, and *vascular-tissue* and *woody fibre*. Cellular tissue, the most important of the three, is composed of a number of very minute bladders, or *cellules*, adhereing on all sides to one another, as may be distinctly seen in the pith of trees, especially the Elder, the leaves of the Bull-rush, the pulp of the Strawberry, &c.; and these bladders are either filled with air or with the various juices of the plant. Woody fibre or *woody tissue*, "consists of thick-

sided transparent tubes, terminating at each end in a conical manner, and applied to one another in considerable numbers, so as to form bundles of great strength and elasticity;" it differs from cellular tissue principally in its toughness and length. The fibre of hemp is composed of woody tissue, while that of cotton is an illustration of the lengthened form of cellular tissue. Vascular tissue comprehends "every form of tissue which does not belong to the cellular or woody. The type of it may be considered the *spiral vessel*, from which the other forms probably are deviations produced by accidental circumstances. A spiral vessel is a cylinder tapering to a cone at each end, composed of exceedingly thin membrane, in the inside of which one or more fibres are rolled in a spiral manner, so closely that the spires all touch each other. When at rest, it resembles a wire spring, and, like that contrivance, is so elastic that it will contract, when extended by stretching the two ends." * Spiral vessels are mostly found in the stalks and veins of leaves, and some parts of stems; and the spiral fibres may be seen unrolled, by pulling in two the stalk of a strawberry leaf. These three tissues are the principal forms of vegetable substance, and are called the *elementary organs;* but we have now to consider the various combinations and arrangements of those organs, constituting the different parts of a plant.

Plants are naturally divided into three great classes, according to their internal structure, and these are called *Exogens*, *Endogens*, and *Acrogens*. The first class, Exogens, comprises the forest trees, and most of the flowering shrubs, and common

* See a work entitled "Botany," published by the Society for the Diffusion of Useful Knowledge; and to which excellent treatise we would refer our readers for a more elaborate account of the subject.

herbaceous plants. Endogens, are the palms, rushes, grasses, irises, lilies, &c.; and Acrogens, the ferns, mosses, fungi, lichens, and sea-weeds; this will give some idea of their most apparent distinctions. Exogens are further characterized by their stems having the bark distinct from the wood, and the woody system distinct from the cellular, a layer or zone of the former being deposited annually; and by the veins of the leaves presenting a reticulated or netted appearance: Endogens by their stems having no proper bark, and the woody and cellular systems being mixed together in a confused mass, without any apparent annual layers; and by the veins of the leaves being nearly parallel with one another, and generally with the margin: and Acrogens are distinguished by having no flowers and often no leaves; by their stems being composed almost entirely of cellular tissue, never increasing in thickness when once formed, but growing only at the points; and by the veins of the leaves, when there are any, being dichotomous or forked.

In order to have a still clearer idea, of the distinctive differences, of these three important divisions of the vegetable kingdom; let us suppose, in the first place, a stem or branch of any exogenous plant, such as the oak, the hazel, or the beech, cut straight across it right angles to its axis. Examining the end of the section thus produced, we find in the centre, the *pith*, which runs up the stem to the extremities of the branches, commencing at the heart or collar of the plant, and composed entirely of cellular tissue. Close round the pith or *medulla*, is a layer of air-vessels called the *medullary sheath*; and beyond this are the layers or zones of wood, one of which is deposited annually between the last year's wood and the bark, and which consist principally of woody fibre

interspersed with a few larger vessels. Surrounding the wood, and enveloping the whole stem, is the *bark*, divided into two distinct parts, namely: the inner bark or *liber*, composed of fibrous matter, a layer of which is deposited annually like the wood; and the outer bark or *cortical integument*, a spongy substance, which soon becomes mixed up with the older layers of the liber. Running through the medullary sheath, the zones of wood, and the liber, are seen numerous lines, called *medullary rays* or *processes*, which connect the pith with the inner surface of the cortical integument. They consist of thin plates or walls of cellular tissue, of no considerable depth, but, from their number in all parts of the stem, keeping up a constant communication between the pith and the bark.

Such is the construction of an exogenous stem, but if we examine the same part of an endogen we shall at once perceive the difference. Take a piece of cane, for instance, and cut it across in the same manner as before. In this there is no pith, no true wood or bark, and no medullary processes; the cellular and the woody tissue are mixed up together in one general mass, not increasing in thickness by annual depositions at the circumference, but by an annual formation of the same mixed substance at the centre; consequently the outside of an endogenous stem is usually the hardest, while the "heart of oak" is always that nearest the pith.

The stems of Acrogens, are even more simple than those of the last division, being composed merely of a mass of cellular tissue. In some cases, however, as the ferns, they are inclosed in a hard woody shell, which is folded and doubled about among the cellular tissue, in such a way, that when cut through, it has the appearance of curiously-shaped bundles of woody fibre running up the stem. This may be very distinctly seen

in the stem of the common brake, where, if cut near the bottom, the foldings of the shell form an outline strongly resembling that of an oak-tree in miniature.

For ordinary purposes the difference in the leaves, as before described, is a sufficient distinction between the three classes, especially when accompanied with an examination of their stems; but there is yet another important character which we have not noticed, viz.: the construction of the seed. The seeds of exogenous plants, produce when they first begin to germinate, two or more opposite leaves, called *seed-leaves* or *cotyledons*. Every one who has a garden must have noticed the two opposite cotyledons in the common annual seeds, as the lupine, convolvulus, &c.; and most trees of the fir kind, have from three to nine seed-leaves. Seeds of Endogens produce only one cotyledon; or if two, as is sometimes the case, they are alternate with one another, not opposite as in Exogens. The seeds of Acrogens are not properly seeds, but are called *spores* or *sporules;* they have no cotyledons and their root springs promiscuously from any part of their surface; not, as in the two former, from a certain fixed point. From this difference in their germination, the three classes are sometimes called, *Dicotyledons*, having two or more seed-leaves; *Monocotyledons*, having only one; and *Acotyledons* without any, but the former names are now generally used. Besides these three classes, two others are sometimes added, viz.: *Gymnosperms*, and *Rhizanths*, the former contains a part of those plants usually included in Exogens, and the latter in Endogens.

Intimately connected with the internal structure of plants, is the motion of their sap or juice, which, like the food of animals, is destined to afford a constant supply of materials for

their growth and various secretions. Concerning this motion in Endogens and Acrogens scarcely anything is known, but with respect to Exogens, among which are the greater part of garden plants, shrubs, and trees, the following is the course which it takes.

The spongioles or little mouths of the root fibres, possess the power of absorbing the fluids with which they come in contact in the earth, and drawing them into the stem and branches; but nothing can pass through their delicate channels in a solid form, so that all the nourishing substances contained in the soil, and in manures, must be dissolved in water before they can be of any use. This fluid matter, after it has been taken up by the roots is called *crude sap*, and in this state it gives out no nourishment; but being forced upwards by the continued supply drawn in by the roots, it rises through the youngest wood, which is that nearest the bark, and called *sap-wood* or *alburnum*, and also partially through the older layers, by which it is conveyed up the stem, through the branches into the leaves. When the plant is very young, before any sap-wood is formed, the office of conveying the crude sap to the leaves is performed by the pith, which dries up and dies, as soon as this service is no longer required. The sap having arrived at the leaves is spread out under the skin in the innumerable little veins, something in the same manner as the blood of animals in the lungs, and hence the leaves of plants are frequently called their lungs. In the leaves, the crude sap being brought under the action of light, undergoes a chemical change called *elaboration*, which renders it fit to afford nourishment to the various parts of the plant. It now begins to descend, but in a different channel to the ascending current; the latter, which is the crude sap, rises

through the alburnum, but the elaborated sap descends through the liber, depositing in its course a new layer of alburnum and also of liber, besides the various other secretions of the plant, the greater part of which are carried away by the medullary processes, and deposited in the heart-wood, to which they give its peculiar colours, as in ebony, mahogany, &c. What remains of the sap, when it reaches the roots again, after these deposits, is discharged into the earth in the shape of excrementitious matter, which is generally supposed to be injurious to the same species of plants from which it proceeds, though not so to others, and to avoid which the roots are constantly extending in search of fresh earth; hence the farmer's rotation of crops. This poisonous quality of the excrement of plants, is however somewhat uncertain, and many deny it altogether.

We have now briefly explained the outline of what is known concerning the structure of the vegetable kingdom; but even this is sufficient to show us how beautiful, how exquisitely perfect, are all the works of God.

> "Oh, human pride, that thou would'st list,
> The tale these small things tell."

FINIS.

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ERRATA.

Page 28, last line, *for* "long spiral tendrils," *read*, "curiously twisting leaf-stalks."

—— 58, last line but one, *for* "green at the top," *read*, "large and full."

—— 9, 13. The Service has by some mistake been placed among the evergreens; it is really a deciduous tree.

—— 130, line 21, *for* "carbon, humic acid, potash, lime, silex, &c." *read*, "carbon, oxygen, hydrogen and nitrogen, potash, lime, silex, &c."

